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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Chemical Trade Development

THE special contributions we publish to-day on the present and probable after-effects of the coal strike on the chemical industry and on the best methods of effecting a speedy recovery from them approach the subject from different angles and together furnish a fairly complete view of the actual and prospective conditions. They are confirmed by others which have been received but which the authors would prefer not to have published. For obvious reasons commercial concerns hesitate to disclose exactly how the strike has affected their business, and the communications that appear in this issue refer to the general situation rather than to particular enterprises. They are sufficiently explicit, however, to support certain broad conclusions.

First, as to the effects. While these admittedly have been severe, the much more remarkable point is the success with which the chemical industry has carried on in spite of them. Six months ago no one would have dared to predict that the industry could have survived so long and so well in such circumstances. The fact that the chemical industry has stood the strain so much better than the general average of industries is largely to be attributed to its superior organisation

and resources. "On the whole," Mr. Woolcock concludes, and he has exceptional opportunities of judging, "the industry does not seem to have suffered to the same extent as the average industries of the country, and has certainly not been affected as much as would have been expected, on a consideration of the intimate connection between the manufacture of chemicals and the supply of coal, both as a fuel and as raw material." To Dr. E. F. Armstrong the outstanding feature has been "the patriotic way in which manufacturers have endeavoured to keep their works going at all costs." The British Dyestuffs Corporation, for example, has been able to meet all the demands of its customers, largely because others upon whom it depended for supplies have also done their part. Another well-known dyestuffs firm reports that "although the stoppage has been a set-back to us we have been more fortunate than we expected, and as regards supplies we have not, apart from coal, experienced any serious difficulty with raw materials." The drug and fine chemical industry, again, has not been greatly affected by shortage of supplies, but certain products dependent on coal have presented difficulties. If we take the sulphuric acid industry, for instance, which is regarded as the index to national industry, the reduction of output to about one-half of the pre-strike figure has been due, not to inability to manufacture, but to diminution of demand. It may safely be said, therefore, that the chemical industry, which is the feeder of so many national industries, has continued to maintain its essential food supplies to them in spite of all difficulties. It is an achievement that justifies pride and satisfaction.

Secondly, will the strike be followed by a quick industrial reaction—even by a mild boom? The opinions on this point are cautious, though hopeful. Mr. Woolcock's view is that any phenomenal improvement in the industry is highly improbable, but that there may be a gradual recovery dependent on the resumption of normal conditions in other industries. Dr. Armstrong's view is much the same. He does not expect any sudden boom, but as stocks are low he anticipates a reasonably brisk revival in trade until current requirements are provided for and stocks become normal. A leading chemical and dyestuffs firm estimates that the coke ovens which were their principal customers will be working within four to six weeks, and after that they expect the resumption of at least as much trade as they had in April, and probably rather more. In the fine chemical industry the immediate effect of the settlement is not expected to be very great nor is that section of the industry looking for any sudden revival in trade, but rather for gradual returning confidence and better conditions. Mr. F. T. T. Reynolds, a well-known merchant, considers that the immediate effect should be a marked

revival of activity. If these opinions are representative, as we believe them to be, the present attitude is one of strong confidence without the anticipation of any dramatic return of prosperity.

When we come to suggestions for the recovery of trade and the prevention of similar industrial conflicts, the suggestions are naturally tentative, but all our contributors are agreed that the essential condition of future prosperity in the chemical as in all other industries is an assured and extended period of industrial peace. As Mr. Woolcock puts it, "the efficient working of the heavy chemical industry is only possible if peace is assured, and only on such conditions especially can an overseas trade policy be decided on which will make competition with other countries possible through minimum prices and reliable supply." Dr. Armstrong, frankly regarding the present conflict as political rather than a genuine conflict between capital and labour, suggests that drastic steps be taken to prevent peaceful picketing and the intimidation to which it has led, as well as the control of trade union organisations by extremists. More than one correspondent draws attention to the good understanding between employers and workers in the chemical industry, and strongly urges the development of a similar spirit and organisation in the other chief industries of the country. From the merchant's point of view, Mr. Reynolds advocates the cessation of all unnecessary interference with trade, particularly overseas trade, by Government departments, and the wider and more general adoption of the principle of mass production with a large turnover at a moderate profit, and, in addition, a quick and decided reduction in shipping freightages and port charges. All these suggestions have their merits, and are useful as showing the lines on which leaders of industry desire to escape from the results of the recent conflict and to secure the peace and stability on which the prosperity of the chemical industry, as well as all others, essentially depends.

"Nitram Limited"

THE chemical industry, and in particular the fertiliser section, will be greatly interested in the announcement made by the British Sulphate of Ammonia Federation at the annual meeting last week that they have appointed Nitram Ltd. their sole selling and propaganda agents. The formation of the new company is a logical development of the policy which the Federation has all along adopted in its propaganda work, namely, that farmers' needs cannot be satisfied with any one fertiliser or with any one form of each particular fertiliser. It was obviously impossible for the Federation itself to translate this policy into the terms of a selling organisation: hence the formation of the new company, which will be able, if required, to sell any fertiliser required by farmers. It is understood that Nitram Ltd. will in the first instance confine its operations to dealings in nitrogenous fertilisers. An important feature of the scheme is, we understand, that Nitram Ltd. has undertaken not to make any profit on the sale of the sulphate of ammonia coming from the Federation. The consumer will, therefore, not be burdened with any additional cost owing to this new development.

The Federation will continue to represent the interests of the by-product sulphate of ammonia industry, although ceasing to take an active part in sales. It is hoped that as a result of this step and of the developments in the production of new forms of nitrogen which are about to take place at the works of Synthetic Ammonia and Nitrates, Ltd., at Billingham-on-Tees, British producers of nitrogen will find themselves in a better position to meet the competition of the continental fertiliser industries, which have made such enormous strides in recent years. The output of all forms of nitrogen at Billingham will be sold by Nitram Ltd. The new company will continue to conduct propaganda work on the broad lines hitherto adopted by the Federation, but we understand that it is proposed greatly to expand the scientific side of the organisation, so that it may be placed in a position to make substantial contributions towards filling the large gaps in our agricultural knowledge. As Dr. Milne Watson, the Chairman of the Federation, said in a recent speech, we are only on the threshold of knowledge in this department.

British Dyestuffs Production

THE Dyestuffs Industry Development Committee has so far recognised the demand for production statistics for this country as to give us the available figures of the main classes for the year 1925. The statement is based on returns furnished voluntarily by the principal British dye makers, and though not comprehensive the combined output of the few firms that failed to make returns is said to be relatively negligible. The figures would naturally have been more interesting and illustrative of recent developments if they had included comparative figures for previous years—the compilation of which, however, would have been a considerable task—but as they stand they are useful. They show, to begin with, that the aggregate total of dyestuffs produced was 32,693,402 lb., which is enough at least to establish our claim to be an important manufacturing nation. In analysing the figures it is notable that the largest total, 7,295,769 lb., represents vat colours (including indigo). This, perhaps, is the most important development to be recorded. Before the war vat dyestuffs were hardly produced in this country at all, except at works controlled by German interests; it was the main problem to which the new British organisations had to address themselves. The success achieved in this difficult field by such comparatively new concerns as Scottish Dyes, Ltd., and the British Dyestuffs Corporation is one in which sincere pride and satisfaction may be felt. It is worth noting, too, that the next largest total, 6,256,276, represents chrome and mordant colours, including alizarine. The British alizarine works represent in a special sense the determination of the textile industry to ensure an independent home supply, and the progress here, too, is gratifying. The commoner colours, though less difficult from the technical and production point of view, have become increasingly satisfactory in quality and range. The new return establishes a precedent and the information now disclosed will no doubt be supplemented and enlarged as time goes on.

No More "Unsettling" Settlements

FIVE years ago last June Mr. Lloyd George "settled" a coal strike. To-day we rejoice that another similar trouble has come to an end. Five years ago the leader of every political party declared in the House of Commons that the settlement was a satisfactory and a permanent one. To-day no such panegyrics are delivered, and yet the present settlement—disordered, incoherent, unorganised as it is—is probably a much sounder affair than the political triumph of five years ago. At the time of the 1921 settlement, Sir Hugh Bell pointed out that the basis of the next dispute had been well and truly laid, and that prophecy has proved to be true. As a result of the happenings of the last seven months, with all their trials and tribulations, one very big thing has been done, and it may be that the effects and reactions will be widespread, to the lasting good of trade, industry and commerce. The National Association of Mine Owners was first deserted; now the National Federation of Miners has for practical purposes come to an end. Coal mining will in future be discussed on a district basis, and in due time and season on a much more rational pit-by-pit basis. The result will be that we shall get coal, that miners will get wages, and that all industry will thrive. Neither Moscow nor Downing Street will be able to frame formulæ that have no bearing upon the practical work of the coal trade, and the burden of a great extraneous incubus will have been removed from the first of our primary industries. It has been a difficult job, it has involved hardships of incalculable cost, but it may, after all, prove to have been worth while.

I.G. Mission to the States

OUR alert New York contemporary, *Chemical Markets*, publishes some interesting information relative to Dr. Bosch's recent visit to the United States. The news is admittedly of a speculative character, but it reads like intelligent speculation, based on some knowledge of what is really going on. The visit is supposed to have had reference to the motor fuel and synthetic ammonia problems. The two leading factors are that iron carbonyl (the Badische product) is not proving so successful an "anti-knock" agent as was anticipated and that tetraethyl lead (the American product), on the other hand, is an admitted success; further, that, although the American oil companies are getting good results from their cracking processes, the Bergius process for the conversion of low-grade coals into liquid fuel promises to meet more completely the threatened shortage of motor fuel in America. The conclusion, therefore, is that an agreement is under discussion by which the I.G. would secure the European rights in the tetraethyl lead process and the Standard Oil Co. the American rights in the Bergius process. As regards synthetic ammonia it is suggested that the I.G. and the General Electric Co. are negotiating respecting the establishment of a synthetic ammonia plant at Niagara Falls on the German plan. While these conclusions are not officially endorsed, there is nothing inherently improbable in them.

Books Received

- THE ARTIFICIAL SILK HANDBOOK. Edited by Frank Nasmith of the *Silk Journal*. Manchester and London. John Heywood, Ltd. Pp. 136. 3s. 6d.
- REPORT ON THE COMMERCIAL, INDUSTRIAL AND ECONOMIC SITUATION IN CHINA, to June 30, 1926. By A. H. George, Acting Commercial Secretary, Shanghai, together with a REPORT ON THE TRADE OF SOUTH MANCHURIA, by O. White, H.M. Consul at Dairen. London: H.M. Stationery Office. Pp. 66. 2s.
- THE ANALYSIS OF PIGMENTS, PAINTS AND VARNISHES. By J. J. Fox and T. H. Bowles. London: Ernest Benn, Ltd. Pp. 180. 16s.
- THE ESSENTIAL OILS. By Horace Finnemore. London: Ernest Benn, Ltd. Pp. 880. 70s.
- THE CHEMISTRY OF CELLULOSE AND WOOD. By A. W. Schorger. London: McGraw-Hill Publishing Co., Ltd. Pp. 596. 30s.
- THE HYDROUS OXIDES. By Harry Boyer Weiser. London: McGraw-Hill Publishing Co., Ltd. Pp. 452. 25s.
- PHOTOSYNTHESIS. By H. A. Spoehr. New York: The Chemical Catalog Co., Inc. Pp. 394. \$6.50.
- THE EVOLUTION AND DEVELOPMENT OF THE QUANTUM THEORY. By N. M. Bligh, A.I.C. London: Edward Arnold and Co. Pp. 112. 9s.
- CATALOGUE OF GENERAL AND INDUSTRIAL LABORATORY APPARATUS. London: A. Gallenkamp and Co., Ltd. Pp. 1214.
- THE CORROSION OF METALS. By Ulick R. Evans. London: Edward Arnold and Co. Pp. 260. 15s.
- A HANDBOOK OF ORGANIC ANALYSIS. By Hans Thacker Clarke. London: Edward Arnold and Co. Pp. 364. 8s. 6d.

The Calendar

Nov.			
29	Royal Society of Arts: Howard Lectures: "Recent Experiments on the Properties of Steam at High Pressure." Professor Hugh L. Callendar. 8 p.m.	John Street, Adelphi, London, W.C.2.	
30	Royal Institution of Great Britain: "The Imperfect Crystallisation of Common Things." Sir William Bragg. 5.15 p.m.	21, Albemarle Street, Piccadilly, London, W.1.	
30	Hull Chemical and Engineering Society: "The Contribution of the Chemist to Medical Science." C. W. Rodmell. 7.45 p.m.	Grey Street, Park Street, Hull.	
30	Chemical Industry Club: Annual General Meeting. 8 p.m.	2, Whitehall Court, London, S.W.1.	
Dec.			
1	Society of Public Analysts. 8 p.m.	Burlington House, Piccadilly, London.	
2	Chemical Society: Ordinary Scientific Meeting. 8 p.m.	Burlington House, Piccadilly, London.	
2	Society of Chemical Industry (Bristol Section): "The Relative Efficiency of the Grinding Media employed in Ball and Tube Mill Grinding." Dr. Geoffrey Martin. 7.30 p.m.	University, Bristol.	
2	Society of Dyers and Colourists (West Riding Section): Luncheon, Lecture and Exhibition.	Bradford.	
2	Royal Aeronautical Society: "Alloy Steels for Aero Work." P. B. Henshaw. 6.30 p.m.	18, John Street, Adelphi, London, W.C.2.	
3	Society of Chemical Industry (Manchester Section): "Chemical Aspects of Organic Evolution." Dr. J. C. Drummond. 7 p.m.	16, St. Mary's Parsonage, Manchester.	
4	Staffordshire Iron and Steel Institute, Birmingham Metallurgical Society, and Birmingham Section of the Institute of Metals: Annual Dinner.	Queen's Hotel, Birmingham.	
6	Institution of the Rubber Industry (London Section): "British and American Machine Practice." A. Fraser.	Engineers' Club, Coventry Street, London, W.1.	
6	Society of Chemical Industry (London Section): "Some Scientific Problems Confronting the Leather Industry." Dr. R. H. Pickard. 8 p.m.	Burlington House, Piccadilly, London.	
6	Institute of Chemistry (Manchester Section): Address by the Chairman, Dr. Herbert Levinstein, followed by a Social Evening.	Manchester.	

Some Suggestions for Chemical Trade Development

Lessons from the Coal Strike

In view of the collapse of the coal strike, and the general feeling that it will soon be followed by a revival of trade, we invited a number of our readers to offer suggestions as to the best methods of enabling the chemical industry and the nation generally to repair the losses as speedily as possible. The points suggested for comment were: (1) the extent to which business has been affected, (2) the directions in which shortage of supplies has been most felt, (3) the immediate effects of the settlement, (4) methods of facilitating the resumption of trade, especially exports, and (5) means of preventing similar industrial conflicts in the future. From the numerous replies received we have selected the following for publication:—

Mr. W. J. U. Woolcock

(General Manager of the Association of British Chemical Manufacturers.)

1. The extent to which business had been affected by the stoppage.

During the first four months of the coal stoppage, the overseas trade, as indicated by the Trade Returns, seemed to be little affected as far as chemical industry on the whole was concerned. Particular cases were peculiar; pitch, for instance, was exported in greater amounts than last year, and although shipments during the past two months have been much less than during the same period of 1925, the total for January to October is still in excess of the imports for last year. Refined oils on the other hand were imported in amounts far in excess of last year, while exports have decreased considerably.

The records for later months show a more marked effect on the industry; coal tar products were imported in increasing amounts, and exports fell away considerably. Ammonium sulphate exports in particular are now at a very low level; shortage in this fertiliser is possibly responsible for the revival in what was otherwise a steadily decreasing trade in Chilean nitrate.

Imports of chemicals, drugs, dyes, and colours during the first ten months of the year showed an increase of about 5 per cent. of last year's value for the same period, while exports were $7\frac{1}{2}$ per cent. less than for January to October, 1925. It is impossible to say exactly what fraction of these changes is directly attributable to the coal dispute, but it may be mentioned that for January to April, that is, previous to the strike, both exports and imports were decreasing (by 2 per cent. and 5 per cent. respectively).

On the whole the industry does not seem to have suffered to such an extent as the average of the industries of the country, and has certainly not been affected as much as would have been expected on a consideration of the intimate connection between the manufacture of chemicals and the supply of coal, both as a fuel and as a raw material.

The production of sulphuric acid during the strike period was about one-half of that during the period immediately preceding the strike, and was about one-third the plant capacity of the Kingdom.

The Question of Supplies

2. What are the directions in which shortage of supplies have been felt most?

Gas works and coal tar distilleries were the first to be materially affected; more acute conditions were experienced by coke oven works, as the rapid cessation of steel works at and about the time of the general strike reduced demands in that direction almost immediately, so that activity, following the course of the blast furnace work, has been reduced to a negligible quantity.

Distilleries and gas works continue to suffer as imported coal does not give, in quality or quantity, such good yields of by-products as the English varieties.

Dye-works followed the course of the tar distilleries, but with a slightly longer lag between the decrease in supplies of coal and supplies of raw material for dye manufacture. The most important influence on the industry has been indirect, namely, the diminishing demand for dyes by the consuming industries, cotton and wool.

Shortage, resulting in increased costs, has been felt most in the heavier chemical industries, although it is only more recently that this has resulted in an extensive closing down of works.

The production of pharmaceutical and allied chemicals has been affected to a slight degree, chiefly by reason of increased prices of raw materials.

In sulphuric acid manufacture, the reason why less acid

was produced was entirely due to the demand having fallen off and not to insuperable difficulties in manufacture. The chief trades where the demand has decreased rather greatly are the superphosphate industry, the sulphate of ammonia industry, and the metal pickling industries. In addition to this, however, almost every other industry has consumed less acid than usual.

The stocks of raw materials necessary to manufacture sulphuric acid have fallen very low, and importation of raw material was made at a cost of from two to three times the pre-strike figure. In addition the cost of power has increased by about two or three times the pre-strike amount, while there has been no increase in the price of the acid.

The Need of Future Peace

3. What should be the immediate effect of the settlement?

It is highly improbable that there will be any phenomenal improvement in the industry, but rather a gradual recovery dependent in particular cases on the resumption of usual conditions in other industries. Prices are not likely to return to pre-strike levels immediately, except in a few cases, as shortage has extended beyond England and become world-wide. This is the case particularly in coal distillation products, and still more ammonium sulphate; the expectation of a successful revival in the industry, and more especially those sections immediately dependent on coal, is more than ever a function of the period of peace guaranteed in the agreements between the mine owners and the miners.

4. The methods most advisable for encouraging the resumption of trade and especially of developing our exports.

Both for development of inland and export trade the guarantee of an extended period of peace in the coal industry is essential. In particular, the efficient working of the heavy chemical industry is only possible if peace is assured, and only on such conditions especially can an overseas trade policy be decided on which will make competition with other countries possible through minimum prices and reliable supply.

The decision of Parliament to postpone discussion of the Factories (No. 2) Bill has been received with a considerable feeling of relief, but it now appears that the period of postponement must be extended if the full value of any adjournment is to be appreciated.

5. What steps should be taken to prevent similar conflicts between capital and labour in the future?

(i) A closer relationship between employer and employee should be attempted, such as is typified in the chemical and other industries.

(ii) The formulation of a more mobile relation between supply and demand should be undertaken.

Dr. E. F. Armstrong

(Managing Director of the British Dyestuffs Corporation.)

IN answer to your questions, I think it may be said that the outstanding feature of the present industrial disturbance has been the patriotic way in which manufacturers have endeavoured to keep their works going at all costs, with the result that the ordinary life of the nation has been continued. Our own business has been able to meet all demands placed on it by the consumers. For the same reason, others in their turn have come up to our expectations in regard to the delivery of supplies to our factories; but inasmuch as our primary materials are the products of the distillation of coal, the continuation of the strike has had a definite and adverse effect on their supply.

We do not expect any sudden boom in conditions as the result of a settlement of the coal strike, but inasmuch as stocks generally must be in a low state, we anticipate a reasonably brisk revival in trade until such time as current requirements are provided for and stocks become normal. It must not be

forgotten, however, that the loss brought about by the strike has to be borne by every member of the community, so that the purchasing power of the home market next year is likely to be impaired.

Possibilities in the export trade depend to some extent on stocks but also on the prices we are able to quote. If coal and the products which immediately depend upon coal remain expensive, then the export trade will be hindered.

We regard the present conflict as political rather than a genuine conflict between capital and labour, and to this extent not within our province to discuss. It is essential, however, that some drastic steps be taken both to prevent peaceful picketing and the intimidation to which it has led, as well as the control of the trades union organisations by extremists.

The Fine Chemical Position

From one of the principal authorities on the British fine chemical industry the following notes have been received:

1. Business has been adversely affected, as it always is in a general way during an industrial dispute or a national crisis, by the diminished spending power of the people, but more particularly by the increase of expenses through the exorbitant cost of coal. It must not be overlooked that the general strike, although only of short duration, was a source of great loss of business which has never been recovered and of considerable expense. Businesses are affected in these strikes on both sides of profit and loss; that is to say, the sales are diminished and expenses are increased.

2. The drug and fine chemical industry has not been greatly affected by shortage of supplies, but certain products dependent on coal—such as bottles—have presented difficulties.

3. We do not expect the immediate effect of the settlement to be very great, nor are we looking for any sudden revival of trade, but for gradually returning confidence and better conditions.

4. This might be brought about by policies on the part of Governments giving confidence of a period of rest, freedom from legislation, less burdensome taxation, promise of a breathing space and quiet conditions under which people can get about their business without fear of crises.

5. The answer to this is easy: effective protection for the willing worker against intimidation. This would have the effect of rendering trade disputes of less duration and would be much better than Government interference as mediators. Relations between employers and employees in industry are improving; in the chemical industry they are good, and in our own particular business they are excellent.

Heavy Chemicals and Dyestuffs

A Northern Firm's Impressions

1. As a direct result of the coal stoppage all coke ovens have also been closed from the beginning of May. Our main customers for sulphuric acid are coke ovens for the manufacture of sulphate of ammonia, and as a result our sulphuric acid plant has only been working to between 25 per cent. and 30 per cent. of its pre-strike output, which even then was below 50 per cent. of its capacity.

In other directions, except primary intermediates dependent at first hand on supplies of benzene, etc., our turnover has been greater than it was before the strike.

2. Supplies of British coal tar products, which to us essentially means crude benzol, stopped entirely at the beginning of the coal strike. Our stocks enabled us to carry on for about six weeks, after which we had a serious shortage for some month or two. Since that time we have been importing French and Belgian material at prices about 33 per cent. higher than English pre-strike figures. Instead of importing crude benzol, to save freight and also the high distillation charges involved on account of the high cost of fuel, during the strike we have been importing pure products, such as pure benzene and pure toluene.

3. The immediate resumption of work in the coal fields will not have much effect, in our opinion, on our own business other than giving us cheap fuel, which, of course, is absolutely essential. We do not believe that the coke ovens will be working for some four to six weeks, but after that we should expect the resumption of at least as much trade in that direction as we had in April, and probably rather more.

In other directions, *i.e.*, the trade which ultimately gets to the textile industry, we anticipate an improvement after the settlement.

4. We have very little comment that we can make here. As far as export is concerned, the things that would help us most would be some definite stabilisation and deflation of the exchanges of such countries as France and Italy.

5. In our opinion the effort of the coal owners to break up the Miners' Federation is a very bad step and liable to cause much trouble in the future. We believe that the best way to avoid such trouble is to have strong national conciliatory councils such as those set up by the Whitley Council scheme, with possibly an independent chairman or arbitrator to give a final decision about any points come to. A scheme somewhat on these lines has been in operation in the chemical trade, as you will doubtless know, since the war, and with the exception of one or two very short and entirely localised disputes there has been nothing in the nature of a strike or lock-out in the industry since the war. As you will doubtless know, one of the leading spirits in this Council was Mr. Roscoe Brunner, and in our opinion the trade as a whole will be a great loser by his death. We seriously hope that some individual will be found both to fill the position and to carry out the spirit which he brought to all discussions on these matters.

Mr. F. T. T. Reynolds

(*Millwards Merchandise, Ltd., Manchester.*)

1. It is obviously impossible for anyone to compute the extent to which business has been affected by the stoppage, as in addition to the vast direct and indirect losses incurred, there is the unfathomable loss through diversion of trade to other countries, much of which may never be regained. Just as there is scarcely a home that has not been prejudicially affected, there is hardly a business house that has not suffered severely, excepting perhaps shipowners.

2. Industries entirely dependent upon coal for their product and trawlers engaging in sea fishing have had to pay very high prices for coal and have realised little or nothing more for their catches, although the retail selling prices of fish have been greatly advanced.

3. The fizzling out of the strike cannot truly be described as a settlement. Happily, the strike is ended for the time being, but "unsettled questions have no mercy on the repose of nations," or it may be added individuals. The immediate effect, however, should be a marked revival of activity, and unless there is reprehensible profiteering in coal, most manufacturing concerns should be busily employed in overtaking arrears, coping with revived demands, and replenishing reserves.

4. A cessation of all unnecessary interference with trade—particularly overseas trade—by Government Departments and the wider and more general adoption of the principle of mass production with the corollary of a large turnover at a moderate profit, and in addition, a quick and decided reduction in shipping freightages and in port charges. Great Britain cannot regain her pre-war volume of overseas trading unless there is a radical reduction in national expenditure. It is just as disastrous for a nation to live above its income as it is for an individual. All the Government and municipal spending departments should be ruthlessly overhauled and brought back to at least relative pre-war levels. Provision should be made at the earliest possible date for electricity for power purposes upon a big scale and at low rates to bring us more on to a parity with our competitors abroad. Such prohibition as applies to imported dyes should be mended or ended at an early date to enable the great export trade in dyed or printed and finished textiles to be, at least in part, regained, and the delegation of the power to impose or remit customs duties should be removed from a Department of the Board of Trade and resumed by the House of Commons without delay.

5. A conference representative of all the essential factors in our industrial and commercial lives should be summoned at an early date to consider and devise or at least recommend the setting up of an industrial court empowered to deal on rational lines and at an early stage with a view to real settlements ensuring right and justice to all concerned.

Annual Meeting of Sulphate of Ammonia Federation New Selling Organisation—Nitram Ltd.

At the annual meeting of the British Sulphate of Ammonia Federation reference was made by the Chairman (Dr. D. Milne Watson) to the proposed formation of a new selling organisation to be known as Nitram Ltd., and a resolution was adopted appointing Nitram Ltd. sole selling and propaganda agent for the Federation until 1946.

THE sixth annual general meeting of the British Sulphate of Ammonia Federation was held at the head office, 30, Grosvenor Gardens, London, S.W.1, on Thursday, November 18. Dr. D. Milne Watson, chairman of the company, presided.

Growth of Synthetic Nitrogen

In moving the adoption of the accounts, the Chairman said that during the year under review developments in the nitrogen market had followed along much the same lines as during the previous year. There had been a total increase of nearly $8\frac{1}{2}$ per cent. in the consumption of all forms of nitrogen, and the demand had been satisfied by a large increase in the output of synthetic nitrogen. Synthetic nitrogen had on balance not only secured the whole of the increase in the world's consumption, but had displaced Chilean nitrate of soda to the extent of about 38,000 tons of pure nitrogen, equal to nearly a quarter of a million tons of nitrate. Synthetic nitrogen now supplied about 47 per cent. of the world's demand; by-product nitrogen—chiefly in the form of sulphate of ammonia—accounting for 27 per cent. and Chilean nitrate of soda for 26 per cent. Under these circumstances synthetic nitrogen was obviously the dominant factor as far as price-fixing was concerned, and as Germany produced about 70 per cent. of the world's output of synthetic nitrogen it was the German price which ruled the market.

In order to ensure that their largely increased production would find a market the Germans last year reduced their prices by about 10 per cent., and we were therefore compelled to follow suit. The same causes were in operation once more at the present time, and we had had to make a further reduction of about 8 per cent. in prices for the current season. As a result the British farmer was paying about £1 per ton less this season than he paid a year ago for sulphate of ammonia.

No Agreement with Chile Producers

Efforts had recently been made to suggest that some agreement as regards price might advantageously be arranged between the producers of nitrate in Chile and the makers of other forms of nitrogen.

There was no foundation for the suggestion. The price of sulphate of ammonia had been fixed by the makers of synthetic sulphate on the Continent at a level which would ensure their finding a market for their increasing production. The more nitrogen they could make and sell, the greater the profit they could make. Moreover, their source of supply—the air—being unlimited, they need not worry about the future. The position of the nitrate industry was fundamentally different. There they had a finite source of supply, and therefore the strongest inducement to get the highest price possible. Looking at the question quite impartially he could not see that an agreement artificially to limit output was likely to prove the bridge to span the abyss which divided these positions. The limitation of output would come naturally as the nitrate industry adjusted itself to the lower level of price fixed by the synthetic nitrogen industry.

These remarks were not to be taken as implying any derogation of the value of nitrate of soda as an agricultural fertiliser when used in suitable conditions. But he protested against the comfortable theory that nitrate of soda had some mysterious virtue, which made it the best of all forms of nitrogen under all circumstances, and that it possessed this virtue because it was a "natural" product.

That was pure nonsense. As far as agricultural results were concerned, there was no superiority *per se* in "natural" nitrate as compared with "artificial" forms of nitrogen, whether produced as a by-product or by synthesis. The question as to which forms of nitrogen it was best to use for a given crop and under given climatic conditions must be determined firstly by the scientific agriculturist, and secondly, by the relative economic value of all the fertilising elements required to produce the most profitable result under those conditions.

Biarritz Conference

This truth was strongly emphasised at the International Nitrogen Conference held at Biarritz last April. The objects of that conference were purely scientific; there was no question of any price-fixing arrangement. It was an attempt to take stock of past achievements in the domains of nitrogen production and use, and to throw some light on future developments. It was the first international attempt to take an intellectual survey of the whole position in the fertiliser industry, with a view to shaping the future course of that industry along the most useful and profitable lines, alike for producers and consumers. The fact that the most learned members present at the conference admitted that we are only on the threshold of knowledge in regard to fertilisers and their use in agriculture, should stimulate all the great fertiliser industries, and especially the nitrogen industry, to pursue scientific research into these problems relentlessly, lavishly, and continuously. Conferences such as that conference at Biarritz, when they got round a table the leading authorities and producers in one large industry, were of immense value in the promotion of good feeling and mutual comprehension, indispensable preliminaries to international peace.

Nitram Ltd., a New Selling Organisation

Dealing with future organisation the Chairman continued: The formation of the Federation has been a remarkably successful venture. It has appeared, however, to some of us that the Federation has now reached a stage in its development when its progress can only continue if it oversteps the limits laid down for it in its constitution. But those of us who are responsible for the proposals which we are putting before you to-day feel that it is far better that the Federation should continue to function within the four walls of its constitution, leaving it to the new company, Nitram Ltd., to enter into the full development of the larger aims and powers, for which the Federation has paved the way. The chief merits of the scheme are four in number.

Firstly, the scheme will provide for the Federation the capital which it lacks, and which has become necessary in view of the extension of its activities.

Secondly, the scheme, while providing for adequate expenditure on propaganda by our members, Synthetic Ammonia and Nitrates, Ltd., definitely limits the share of the cost of propaganda and administration which the by-product member of the Federation will be called upon to shoulder in the future to the very modest sum of 3s. per ton produced, and this is a maximum which may possibly be reduced.

Thirdly, the scheme gives the members of the Federation four years' practical trial, in which they can observe for themselves its merits or its disadvantages. If, at the end of May, 1930, the members of the Federation do not consider that the scheme has benefited them, then they will be quite free to go their own way. If, however, as I hope and believe, this scheme is going to be beneficial to the members of the Federation, then I think that you will all agree with me that its adoption to-day will do more than anything else we could possibly do to provide for the continuation of the Federation after 1930.

The fourth point is that this scheme means the creation of a selling organisation which I believe in time will profoundly affect the whole fertiliser position in this country. Agricultural chemists have all along recognised that each different kind of fertiliser has its own special function and that a well-balanced plant food is made up of all kinds of different ingredients. Naturally, the commercial interests which have been responsible for the production of the various fertilisers have endeavoured to get the maximum sale for the particular product which they happen to be making. Although we have not let that fact bias our propaganda work, which has been carried out on very broad and sane lines, yet the fact that this Federation was formed to sell sulphate of ammonia naturally

precludes it from dealing with other fertilisers. That limitation will be removed by the formation of Nitram, for the new company will be in a position to sell any kind of fertiliser which is required by the farmer.

I think we shall find that, as a result of this liberty of action, the work which Nitram will be able to carry out will be infinitely more beneficial, both for producers and consumers, than the work to which the limitations for the Federation have restricted it. The Nitram scheme gives the by-product maker of sulphate of ammonia in Great Britain a very important voice in the conduct of these fertiliser sales and propaganda.

Combines and Prices

As regards the international aspect of the matter, similar bodies are already in existence in Germany, France, Italy, and Belgium. The producers in all these countries have found it greatly to their advantage to have a selling organisation which could deal, not only with their own particular product, but with all the fertilisers required by farmers, and at the same time you have only got to look at the reduction in prices which have been partly the result of centralisation of production and sales to see that farmers all over the world have benefited very considerably.

In this connection I welcome the formation of Imperial Chemical Industries, Ltd., as a wise step, both in the interest of the nation at large and also in that of the particular groups of producers and consumers mainly concerned. This is an age of mass production, and in order to achieve production on the largest scale, capital and technical resources are required which are beyond the reach of any individual firm. The loss of freedom which it is the fashion to deplore has in many cases merely meant the loss to the individual of the opportunity of making profits calculated on an unnecessarily high cost of production and distribution at the expense of the consumer—an opportunity of which he is deprived by the advent of the combine or trust, which can both produce and sell at a cheaper cost. It seems to me that the bigger the combine the greater are the number of points at which its activities touch public life, and the greater, therefore, the influence of public opinion upon it. That in itself is a very considerable safeguard for the consumer. The formation of Imperial Chemical Industries, Ltd., is, I think, an additional reason for recommending members of the Federation to agree to the Nitram scheme.

The Chairman described the gratifying results of experiments in the application of nitrogen to grassland and the prospects of greatly increased production of milk, beef, and mutton, and paid a tribute to the efficiency of their staff, especially the propaganda department directed by Mr. T. H. J. Carroll.

The accounts having been adopted, it was resolved, on the motion of the Chairman, seconded by Mr. S. Henshaw, to appoint Nitram, Ltd., sole selling and propaganda agent for the Federation till 1946.

Thomson McLintock and Co. were reappointed auditors, and a resolution to re-elect Dr. D. Milne Watson (Gas Light and Coke Company) chairman, and Mr. E. J. George (Consett Iron Company, Ltd.) and Mr. S. Henshaw (Staffordshire Chemical Company (1917), Ltd.) vice-chairmen for the ensuing year was carried with acclamation.

The Chairman, Mr. E. J. George, and Mr. William Fraser (Scottish Oils, Ltd.) were nominated as the Federation's representatives on the board of Nitram, Ltd.

Votes of thanks to the Executive Committee, the Special Committee on the Nitram proposals, and the Propaganda Committee were carried unanimously, and Mr. A. Stanley (Simon-Carves, Ltd.), chairman of the Propaganda Committee, returned thanks. The proceedings terminated with a hearty vote of thanks to the staff, moved by the Chairman and seconded by Mr. R. C. Miller (Scottish Oil Agency, Ltd.), which was acknowledged by Mr. F. C. O. Speyer (general manager) and Mr. G. A. Black (export department).

An Australian Inquiry

MR. L. W. OVERELL, representing the Melbourne firm of Overell and Sampson Pty., is at present in London, and wishes to get into touch with British machinery and chemical firms interested in Australian trade. Letters can be addressed care of The National Bank of Australasia, 7, Lothbury, London, E.C.

Journalistic Technology

To the Editor of THE CHEMICAL AGE.

SIR,—We have recently supplied one of our "H.H." concentrating tables for the washing of small coal to the new coal research laboratory of the Birmingham University, which is to be opened on the 25th of this month.

Judge of our surprise when, on reading a preliminary notice of the opening of the laboratory in the *Weekly Dispatch* of last Sunday, we found the following statement under a paragraph headed "Coal Research: First Laboratory in Land to Open this Week."

"Particular attention is to be paid to the pulverisation of coal, in which *ash, water, and other substances are used to secure economy in burning*, and experiments are to be made in the conversion of coal into oil."

The italics are ours. No doubt what the author of the paragraph had in mind was the fact that the concentrating table is used to remove ash (i.e., shale, pyrites, and other substances) from coal, in order to reduce the ash content and thus secure more efficient combustion. When will the lay Press either appoint a consultant, or a permanent member of their staff, with scientific qualifications, whose duty would be to censor such statements as that quoted above?

Incidentally, we wonder whether the members of the Fuel Research Board feel pleased with the statement made in this paragraph that this is "the first laboratory established in this country for research in the treatment of coal."—We are, etc.,

HUNTINGTON, HEBERLEIN AND CO., LTD.

47-51, King William Street, E.C.4. November 24.

A Clearing House for Information

To the Editor of THE CHEMICAL AGE.

SIR,—As a result of successful conferences which have been held annually for the past three years, the Association of Special Libraries and Information Bureaux has been formed and is now in process of incorporation. The Council cordially invites the support of all organisations and bodies, commercial houses, industrial concerns, etc., which attach adequate importance to the collection, treatment and dissemination of information relevant to their work.

The new body will act as a channel through which any inquiring member may be put into direct touch with the source of information required. With the generous assistance of the Carnegie Trust, the Association has in preparation a directory of sources of specialised information in the British Isles; a copy of this will be sent free to each member as soon as available. In addition, it is hoped to establish, by co-operation between interested parties, unified policies with respect to abstracting, cataloguing, indexing, filing, etc.

Membership is open to all interested bodies, and a small subscription of £2 2s. per annum has been fixed. Further details, including a form of application and a list of members, will be furnished by the Secretary, 38, Bloomsbury Square, London, W.C.1. To ensure its establishment on an adequate scale not less than 500 members are required by March, 1927. On behalf of the Council of the Association of Special Libraries and Information Bureaux, yours, etc.,

R. A. GREGORY.

Artificial Silk in Belgium

At a Brussels meeting brought about by Mr. Loewenstein, the financier, it was stated that the Tubize artificial silk company was actually producing seven tons of silk (collodion-viscose and cellulose acetate) per day, while the British Celanese Co.'s Spandow factory produces four tons per day. In order that the Tubize company may dispense with the present necessity of obtaining its material for the manufacture of cellulose acetate silk from England at a high price, a programme has been prepared for the construction of a Belgian cellulose acetate factory. For the realisation of this programme the International Holdings and Investment Co., Ltd. (formerly the Cellulose Holding Co.), offered to the Tubize company a credit of one million pounds sterling, which was, however, rejected. The Loewenstein group has now acquired a substantial interest in the capital of the Tubize company, with a view to assisting in the necessary developments.

The Chemist in Non-ferrous Metal Refining

Mr. F. C. Robinson's Streatfeild Memorial Lecture

In delivering the Streatfeild Memorial Lecture for 1926, Mr. F. C. Robinson dealt with the position of the chemist in the non-ferrous metallurgical industries. The outline which he gave of the knowledge and experience required should be of great value to those who contemplate entering this field of chemistry, or who are in any way interested in it.

THE Streatfeild Memorial Lecture was delivered on Friday, November 19, by Mr. F. C. Robinson, at the Institute of Chemistry, London, which has taken over the arrangements for the lecture, owing to the closing down of Finsbury Technical College. Professor G. G. Henderson, President of the Institute, was in the chair.

Mr. Robinson chose as his subject "The Chemist in the Non-Ferrous Metallurgical Refinery." He stated that he had been guided in the choice of his subject by the principles underlying the practical training given at Finsbury Technical College and so conscientiously practised by Mr. Streatfeild, whose willing assistance and genial character was still remembered by his old students. He proposed to confine his remarks rather to the works chemist than to the academic or research chemist. As Mr. F. H. Carr in his lecture last year had pointed out the need for men who could apply chemistry to industry, the present lecture would be devoted to a consideration of some of the duties and experiences falling to the lot of a chemist, in the non-ferrous refinery, with particular reference to the precious and noble metals, followed by some suggestions on the training of the chemist and his assistants.

The Chemist's Range of Activities

Each class of smelting, extraction or refining works had its own special problems. Apart from the routine and research work usually associated with the laboratory, the chemist would be required to undertake the supervision of most scientific or technical tests, unless the works were very large, in which case there might be a metallographic expert, and special departments for pyrometric, electro-chemical or potentiometer tests and work connected with smelting operations. In any case the technical manager of all these departments must have a broad training, of which the principal constituent should be a knowledge of chemistry, chemical engineering, and plant. The lecturer's own experiences had been in connection with the extraction and refining of the precious and noble metals, but he said such experiences were typical of other non-ferrous metals.

After giving a brief outline of the work of smelting and refining gold, silver, and the precious metals, a review was given of the developments of the past 30 years, noting the more important changes. New and quicker methods of analysis had become necessary, the result being a great saving of time and increased accuracy in many cases, as for example: the volumetric estimation of lead by a standard solution of ammonium molybdate; iodometric estimation of copper in the presence of nitrates; cyanometric methods for nickel, etc.; Volhard's thiocyanate method for silver—preferred by several public assay offices to the Gay Lussac or salt method; the discovery of dimethylglyoxime as a precipitant for nickel and its separation from cobalt. In electro-analysis, the rotating electrode method had enabled the estimation of copper to be carried out in one-twentieth of the usual time.

New Methods

Some of the greatest developments had taken place in the extraction, separation, and refining of the noble metals, and the increased demand for these metals in a state of purity, coupled with an enormous rise in price, had given a stimulus to work in this connection. Methods of analysis and refining had had to be worked out on very meagre outside information, and all those who had to tackle these problems would agree that they were probably the most difficult which had to be solved. With the advance of scientific methods had necessarily come increased work for the chemist. In investigations of faulty metal, complete analysis was no longer considered sufficient to explain some defects. An examination of the metal for its physical properties, fracture, and constitution as revealed by etching and the microscope often threw light on the character of a commercially pure metal or alloy, and faults were now easily traceable to improper melting, casting, rolling and annealing, for which the refinery had often been blamed.

The science that had made the most profound advance and changes in industry in the last 30 years was electricity, and the electro-refining of silver and its separation from gold and platinum had exhibited such economy and efficiency that the old processes had become a back number. Electro-refining was being used successfully for the refining of gold from the anode slimes, and its separation from small quantities of silver and platinum. Electricity had also been applied to the melting of silver although not so largely as in connection with alloys of the base metals. We in this country, apart from steel, had not developed the use of electricity for melting to the extent that had taken place in the United States, although the Ajax-Northrup high frequency induction furnace was being used in small sizes for melting 70 to 100 oz. of platinum successfully. Another application of electricity which was finding favour among smelters was the electrostatic precipitation of fume from waste flue gases, the principle of which was first applied by Sir Oliver Lodge, but developed and adapted commercially by Cottrell in the United States. Some plants for this purpose were installed in this country, one having been erected to save the potash salts in blast-furnace gases. The refining of gold and platinum was still mostly a wet chemical process, and in recent years there had been a move in the direction of the wet extraction of the metals from their ores and products.

The Handling of Men

These various developments had involved greater and greater demands on the chemist in the non-ferrous metallurgical industry. Mr. Robinson emphasised the importance to chemical students of visits to works during their period of training, and pointed out to employers the advantages to themselves of affording their junior assistants opportunities of attending evening classes. He urged upon the works chemist the need for tact in order to secure the necessary co-operation in introducing new processes. Some time ago, he said, he worked out a method of making the action of boiling sulphuric acid selective in the solution of certain metals in an oxidised residue, leaving others unattacked. By previous reduction with sulphur dioxide the desired object was obtained, but after the process had been performed successfully by the men in the works for some time the results became unsatisfactory, and it was found that the men were not continuing to carry out instructions. Since this difficulty had been overcome the process had continued to be a success.

This difficulty with workmen manifested itself in all directions. Some workmen of the old school had strange notions, and passed them on to others. Nevertheless, it was impossible not to have great respect for the experienced and intelligent workman who took a pride in his job. It must not be inferred that when a process was working with clock-work precision a chemist was no longer needed, because without the supervision of the chemist and the analyst it was more than probable that things would not go on satisfactorily. There had often been noticed a tendency for men, if left too much to their own devices, to revert to the primitive way of doing things in preference to keeping the plant provided up to concert pitch. Speaking in defence of laboratory experiments on any contemplated new process, Mr. Robinson said that, if properly performed, experimental melts in a No. 5 Battersea crucible gave, on the whole, a good indication of what would happen in the reverberatory furnace, although the conditions of time and atmosphere were so different. A charge could then be tried on the reverberatory furnace without much risk or special outlay. In wet processes, too, the laboratory results could be further tested in larger and provisional plant.

It was important to consider the health of the employees, and not merely in a degree sufficient to satisfy the Home Office Regulations. It must be recognised that some men, for example, were more liable to skin troubles than others in working with certain chemicals, and such men should be

transferred to other work. On the other hand, perhaps quite a simple alteration by way of a preventive measure would remove the difficulty. The real point to bear in mind, said the lecturer, was that men were more important than machinery.

The Education of the Chemist

As regards the education of the chemist, a good general education at school was a necessary foundation. The chemical student desiring to enter metallurgical industries, besides acquiring a knowledge of chemical principles and analysis, must also know something of theoretical and practical physics, electricity, mathematics, and engineering. He must also study metallurgy and metallography and endeavour to extend his studies, perhaps at evening classes, to geology, mineralogy, and mining, whilst it would well repay him to retain the knowledge he had of French and German, and even to increase his acquaintance with these languages. When it was realised what a chemist had to learn, perhaps it was not surprising that he was not always found to be a good business man. Nevertheless, if he aspired to control commercial processes, he must interest himself in the commercial aspect.

Looking back, concluded Mr. Robinson, he could consider the Finsbury chemical course a very suitable one for the works chemist, but two years was not adequate in these times. At the same time, if a student stayed too long at a college or university he became less inclined for the commercial application of his knowledge in the works and it took him longer to adapt himself to the works way of doing things. He was doubtful whether the present system of university training, with its lure of degrees and honours, was the best for our industries, or as suitable for the works chemist or chemical engineer as it was for the research chemist or the teaching profession, but the facilities offered by some of the universities for post-graduate courses were excellent. It would be a great help if a chemist or metallurgist could finish his training with chemical plant and large scale apparatus with the facilities that were offered to the engineer in many universities, and have access to chemical plant and large scale apparatus similar to the experimental workshop and engineering and electrical plant, which was provided at the old Finsbury Technical College. In any event, the managers of works should be prepared to give facilities for their chemists to become acquainted with the processes used on the works and to have a plan for training them to greater utility. If the practical chemist were required he must not be shut up in the laboratory too long with his books and beakers, but must have opportunities of gaining experience of men, methods, material and money.

Dr. G. T. Morgan, proposing a vote of thanks to the lecturer, said that if the Finsbury course could have been extended to three years, it would have held its own with some of the more pretentious institutions. Even the two years' course was a chemical engineering one, and it was remarkable that the College should have been closed down just at the beginning of the boom in chemical engineering.

Professor Henderson said that the Institute had done all that was humanly possible to prevent the closing down of the Finsbury Technical College.

Testing by Pharmacists

Dr. J. H. BURN, director of the Pharmacological Laboratories of the Pharmaceutical Society of Great Britain, in the course of a lecture before that body recently, said that it would be very valuable if in every town of 10,000 inhabitants or more there was at least one retail pharmacist who had received a thorough training in testing those things which were tested every day at hospitals. At the present time doctors had no time for such work, and must either do without an analysis or send samples by post to some institution in London or elsewhere. In practice they did without the analysis in many cases in which it would be valuable to have it, but if a doctor could establish a connection with a local pharmacist well trained in such methods he would be able to get far more satisfaction than if he sent samples to an unknown person. The society would, therefore, perform an important service if it arranged a voluntary course for that purpose. Such a step would in course of time materially add to the health service in the country, and do more than anything else to raise the status of the pharmacist.

I. G. Mission to United States Negotiation with American Interests

FOR the past month (*Chemical Markets*, New York, states) speculation has been rife as to what part the United States is to play in the future development plans of the I. G. Farbenindustrie. Ever since Dr. Bosch, the very active head of the great German chemical organisation, came to this country accompanied by a retinue of some forty executives and chemical engineers, rumour has been busy. Questions and speculative answers have been flying back and forth. It is generally understood that this visit has a double-barrelled purpose, the one cartridge loaded with motor fuel, the other with synthetic ammonia. Based upon deductions of probability, the following two solutions have been pretty generally accepted.

Motor Fuel Problem

The first connected with motor fuel is based on the known fact that iron carbonyl is not as successful an anti-knock as was anticipated, while on the other hand, the Bergius process for the liquefaction of low-grade coals and their transformation into a thoroughly acceptable motor fuel by chemical means has surpassed expectations of success. Although the American petroleum companies have very generally derided the report of President Coolidge's Committee to the effect that our gasoline supplies would not last longer than six years, they have not hesitated to spend considerable money energetically to prospect the world over for new oil fields. Although they have certainly made no secret that their new cracking processes are giving them much larger yields of motor fuel, nevertheless it is a known fact that the Shell interests abroad and the Standard Oil interests of this country have associated themselves financially and through sales agreements with the I. G. in the European field.

One can deduce, therefore, that while undoubtedly our gasoline supply will be extended by improved chemical means, nevertheless it has a definite limit which is sufficiently close to the commercial horizon to make the big petroleum interests deeply concerned in the chemical fuel substances. Couple this fact with the success of tetraethyl lead as an anti-knock and we have a logical foundation for the current rumour that Dr. Bosch held virtually his first conference in America with Mr. Teagle of Standard Oil, and that very shortly after they were together, a cable called three of his most trusty lieutenants, Schmitz, financial expert; Gauss, technical authority, and Knieriem, the son-in-law of Dr. Bueb and one of the most promising of the younger executives of the I. G. forces. These gentlemen met with similar financial and legal lights of the Standard Oil companies with general instructions to draw up a contract by which the I. G. would secure European continental rights to the tetraethyl lead process and the Standard Oil American rights to the Bergius process. Circumstantial evidence that Dr. Bosch has investigated some of the low carbon fields of Texas, of Southern Illinois, and of North Dakota, that Dr. Bueb has returned to Germany accompanied by a responsible officer of Standard Oil Co. are presented as proof that, if not already signed, the principal clauses of this contract are well agreed upon.

Synthetic Ammonia

As to the second proposition; the foundation rests upon the well-known perfection of synthetic ammonia processes in Germany and speculations as to the future development of their synthetic methanol. Dr. Bueb, head of the Stickstoff-Syndikat, charged with the sale of nitrogen fertilisers, has not only been moose hunting in this country. Again circumstantial evidence points to the arrival of an opportune time for completing arrangements for the industrial establishment in America through lease or exchange of the rights to this tremendously important new branch of chemistry carried to its high perfection in Germany. Again rumour attaches I. G. negotiations to a corporation which has already a close contact with them in Europe. The electrical interests at Schenectady are already an important factor in the German electrical trust. It is understood that most friendly and apparently promising preliminary arrangements have been made between the General Electric and I. G. leaders, embracing the temporary operation of a well known plant at Niagara Falls with the purpose of testing its possibilities for the location of a gas pressure synthetic plant of approved German type in this country.

Plant and Animal Chemicals

Their Place in Chemical Industry

A LECTURE ON "Chemical Industry in its Relation to Delicate Plant and Animal Products" was given by Mr. Francis H. Carr, president of the Society of Chemical Industry, to the Liverpool Section of the Society on Friday, November 19.

In selecting the title of his address, said Mr. Carr, he had in mind to tell them something of the implements which were now available to chemical manufacturers who needed to apply extreme refinements of process control. Although probably the machinery was already familiar to the audience, nevertheless, in utilising it in applying recent methods of isolating delicate plant and animal products, some experience may have been gained which would be of interest to others. The introduction of modern plant had rendered it possible to prepare on a manufacturing scale unstable substances which could not have been made by the cruder methods of former days. Biochemical research was indicating the way to carry out operations so as to isolate delicate cell constituents without decomposing or altering them. Particularly it taught them to work within a narrow range of temperature and under conditions which controlled oxidation, reduction and enzymic changes. Glucosides, alkaloids, polypeptides, enzymes, phosphatides, etc., called for this sort of care in handling them, and he proposed briefly to describe some of the ways in which factory practice was keeping pace with the achievements of the scientific laboratory in the development of suitable methods.

Refrigeration

Refrigeration was an important process. Many substances appeared during life to remain safely stored within the living cell, but immediately the living process ceased they underwent rapid change. The best method of bringing them under immediate control was to lower the temperature to zero, and this rapid cooling had to be done in a minimum period of time. Exposure in a thin layer to a current of air at a temperature of at least -10°C . was an effective method. The air could be cooled by blowing it over coils through which cold brine was circulated. In a better and more effective method the cold air in circulation was blown over a cascade of cold brine and subsequently passed through baffle plates for the removal of spray. It had the advantage of producing an actual drying effect upon the substance; indeed, by long continuance it could be completely desiccated.

Autolytic changes could be inhibited by the adjustment of the acidity of the solutions to an exact point on the p_{H} range. In the process of neutralisation harm might result from the temperature being raised unless precautions were taken to prevent it. The liquid to be neutralised was therefore put into circulation through a coil immersed in ice and salt. As the cooled liquid issued from the pipe into the reservoir the reagent was added. The content of the reservoir was stirred and the liquid was kept in continuous circulation by the pump. A recently introduced device for bringing about continuous mixing of two liquids was by making them meet on a disc rotated at a high speed.

The proteins were important biological products. They were amphoteric in nature, having both COOH and NH_2 groups. The exact point of equilibrium on either side of which the protein part of the molecule formed a cation or an anion, as the case might be, was called the iso-electric point. Many proteins became insoluble at this point but were quite soluble on either side of it. That point of hydrogen ion concentration could be reached by delicate adjustment, and in the factory it was possible to carry this out with great rapidity by the aid of a range of Sorensen's buffer solutions, a range of indicators and a comparator. When precipitated, such proteins were usually very difficult to filter, and high speed centrifugals constituted the best means of removing them from the liquid in which they were suspended. The centrifugal separator provided a useful method of carrying this out. The Sharples Co. made a factory machine which rotated at 17,000 revolutions per minute.

The stability of many biological products might be taken as a function of the factor temperature multiplied by time; for instance, less harm was done to a substance if heated to 100° for one second than if heated to 40° for several hours. The most suitable vacuum concentration apparatus was the

continuous type. Tubular evaporators, constructed for continuous flow, offered a special advantage in the matter of the time factor. The Kestner type of tubular evaporator was particularly suitable. The liquor and vapour were separated in a tangential separator. The liquor after being trapped was passed to a receiver. Other kinds of evaporators in which the substance was heated for the minimum of time were film and spray driers. In the spray drier made by the Kestner Co. the liquid was projected in a finely atomised form into a chamber at atmospheric pressure, in which hot air circulated in a violent cyclone. The Krause evaporator operated in a similar manner, but a partial vacuum was maintained by removal of the air at a high speed. Complete drying could be effected at a temperature of about 50° .

By way of illustrating the use of the plant described in a factory process, Mr. Carr exhibited lantern slides showing the insulin plant at the British Drug Houses, Ltd.

Sir W. Alexander in America

A Chat on British Chemical Affairs

IN the current issue of *Chemical Markets* (New York) appears the following account of an interview with Sir William Alexander, who is now on a visit to the United States:—

"Low temperature carbonisation of coal is the important problem facing the chemical industry of Great Britain to-day, stated Sir William Alexander, K.B.E., M.P., of London, a director of American Cellulose and Chemical Co., Ltd., Maryland, and president of American British Chemical Supplies, Inc., to a representative of *Chemical Markets* upon his arrival from England. Sir William stated that the burning of bituminous coal for domestic use is a cause of great waste and also of a greatly polluted atmosphere. The coking of coal by the means used in this country would produce a very small-sized coke that would not be satisfactory. It will therefore be necessary to form the coke into briquettes before it is burned. Benzene is in very heavy demand in Great Britain and sells at 3s. or 72 cents per gallon, due to the high prices prevailing for gasoline in that country. The other by-products of coke also find a ready market there. It is planned to carry on the carbonisation at a temperature of approximately 550°F .

"The recent merger of large chemical concerns in Great Britain has been contemplated for some time, stated Sir William. He further stated that it would be quite impossible for the British Dyestuffs Corporation, or any other dyestuff manufacturer, to exist by itself due to the sharply competitive conditions caused by the German I.G. The merger, he stated, is similar to the German Trust. Through the economies in operations and in sales it was anticipated that competition from the German Trust in both Great Britain's home and foreign markets can be successfully met. Of the companies represented in the merger, Sir William stated that the Nobel Industries was quite similar to Du Pont in this country. The company was a manufacturer of only explosives up to the war. After the war the company branched out into various products, such as chemicals, artificial leather, lacquers, dopes, automobile accessories, etc. The United Alkali Co. is a merger formed in 1898 of all the companies in Great Britain employing the Leblanc process for producing caustic soda, soda ash, acids and bleach. Brunner, Mond and Co. are the pioneers in England in the Solvay process for producing alkalis. The British Dyestuffs Corporation was formed during the war for the production of dyes and intermediates. As to rumours existing in regard to an agreement to be reached between the British Dyestuffs Corporation and the I.G., Sir William stated that the agreement had been completed as far as the German interests and the British interests were concerned. The British Government, which was at that time interested in British Dyestuffs Corporation, was the stumbling block in the completion of the agreement."

New Post for Dr. Herty

DR. CHARLES H. HERTY has resigned the presidency of the Synthetic Organic Chemical Manufacturers' Association of the United States as from November 15 in order to assume the duties of advisor to the Chemical Foundation, Inc. Dr. Herty will devote his entire time to the work of the Chemical Foundation at the offices of the Foundation, 85, Beaver Street, New York City. For the present an executive committee of the Board of Governors will be in charge of Association activities.

Synthetic Glass

Professor Baly on its Properties

SOME interesting details with regard to the synthetic glass "Pollopas," discovered by Dr. Fritz Pollak, of Jena, were given at Bradford on Thursday, November 18, by Professor E. C. C. Baly, F.R.S. (of Liverpool University), in an address before the West Riding Section of the Society of Dyers and Colourists.

Professor Baly said that the rights of the process had been purchased by an English syndicate which included Mr. John Player, the tobacco magnate, and before acquiring the rights the syndicate had asked him to make a thorough investigation into its possibilities. "Pollopas" was a condensation product of formaldehyde and urea, and by controlling the hydrogen ion concentration in the process, Dr. Pollak had been able to secure a thoroughly satisfactory condensation, yielding an absolutely transparent substance. The condensation was carried out at 120° C., and at present only about 5 cwt. was made at a time. The process depended upon certain salts and the concentration of hydrogen ions, details of which he could not disclose. The solution was poured into a very large volume of water, when it was precipitated, washed, and run into a vessel, from which the water was evaporated. It was run into moulds and heated at 85° C., when it gelatinised in the moulds. It was then absolutely jelly-like, and the completion of the drying process was an operation requiring the greatest care. A variation of the process was now being used whereby a powder of the material was made, and by hot pressing it was possible to produce certain articles. If the condensation was so carried out that a portion of the water was retained, a substance exactly like meerschaum and of exactly the same specific gravity could be produced.

Properties of the Product

"Pollopas" in its original form possessed the unique property amongst natural products of being able to transmit ultra-violet rays. It was perfectly transparent to them, and from the point of view of health, this property was one of enormous possibilities. Unfortunately, however, "Pollopas" in this condition was hydrophyl, and in countries where extremes of heat and humidity were met with, it eventually developed cracks; though it was quite satisfactory for use in European countries. A variation of the process, by which 5 per cent. of thiourea was substituted for urea, yielded a product which overcame this difficulty; unfortunately at the same time it became opaque to ultra-violet rays. The synthetic glass was perfectly transparent to light. It was as resistant as glass to wear and scratching. It could not at present be used for optical purposes, because striation had not been overcome. It was extraordinarily elastic. A ball of it could be dropped on to a hard surface, and it would rebound without damage. It was completely unsplinterable, and a man could thrust his fist through it without injury. This opened out enormous possibilities for use on motor-cars, because its cost was at least one-tenth of that of the present composite unsplinterable glasses. For ordinary uses it was no more expensive than glass, its higher cost of manufacture being balanced by its lower specific gravity.

At present they had not been able to guarantee an absolutely flat plate, and consequently its use for motor-cars was not yet practicable. Their whole efforts were being concentrated on satisfying the needs of the Admiralty, who found that glass in port-holes and dead-lights was damaged by the concussion from the big guns, whereas "Pollopas" stood the strain perfectly.

Use as Lacquer and for Ornament

"Pollopas" in its liquid form had been used with great success as a lacquer for motor-car coach work. It was also in use in various ornamental forms, such as umbrella handles, cigarette holders, fancy buttons, and so on. It could be dyed various colours. A novel use of it was in bead-form on textiles, the "Pollopas" in plastic form being, so to speak, printed on to the cloth, and becoming inextricably embedded in the fabric. It was not a competitor of glass, each product having its own advantages. "Pollopas" commenced to deteriorate at 200° C., and decomposed at 250° C. It was not inflammable. On the other hand, it could be heated to 150° C. in superheated steam, dropped straight into liquid air, and the process repeated twenty times without damage.

Works Process Temperature Control

Stanton Ironworks Chemist's Lecture

ON Wednesday, November 17, Mr. W. Woodhouse, chief chemist to the Stanton Ironworks Co., read before a joint meeting of the Nottingham Branch of the Society of Chemical Industry and the Nottingham Society of Engineers a paper on "Temperature Control in Works Processes" with special reference to pyrometers. Dr. E. B. R. Prideaux presided.

The paper dealt with the various types of instruments used for controlling the many processes carried out at the Stanton Ironworks, including the following:—mercury thermometers for pipe lines, economisers, feed water, and flue temperatures; mercury in steel thermometers for indicating and recording, which were used for recording the temperatures at the coating tanks for the pipes, the core drying stoves, the tar heating tanks for making tarred slag and in the steaming chambers at the concrete plant; thermo-couple outfits, including base metal (iron-constantin), platinum, and rhodium thermo-couples and indicators. The theory of thermo-couples was enlarged upon and practical demonstrations of these instruments were given. It was pointed out that thread recorders were used in conjunction with those couples which were used for registering temperatures up to 1400° C. These outfits were used for controlling temperatures on the annealing furnaces.

Position of Temperature Control Units

The lecturer pointed out at this juncture the necessity for having temperature control units placed so that the workman in charge of the job could see what he was doing, rather than placing the recording or indicating instruments in the manager's office, a plan which was often followed. The system, "Indicator on the job, recorder in manager's offices" gave satisfactory control. In describing the resistance type of pyrometer, the utility of long distance instruments in connection with power plants, storage vaults, etc., or any other place where numerous temperatures had to be read, was pointed out. All these scattered thermometers could be concentrated at one control board, where they can be read with ease. The resistance type of pyrometer, which measures the increase of resistance in a platinum wire due to increased temperature, was found of great service in controlling the temperature of the blast at blast furnaces, and was used in conjunction with a Callendar recorder, and in such cases showed when it was time to change from a cold stove to a hot stove to keep the blast temperature correct. Other types of pyrometer dealt with were the optical and radiation pyrometers for dealing with temperatures above 1400° C.

Optical Pyrometers

Optical pyrometers generally were not so satisfactory as the types before mentioned, as the personal element entered into their consideration, but they were the only available type of instrument for use at temperatures exceeding 1400° C. A useful type of optical instrument exhibited was the Cambridge disappearing filament pyrometer. This type was not influenced so much by the personal element, the light from a heated platinum wire being compared against the light emitted by the object whose temperature was being tested. A very practical form of radiation pyrometer of the fixed focus type made by the Foster Instrument Co., of Letchworth, was also dealt with.

These optical pyrometers, although not always reliable for giving absolute correct temperatures, were very useful for controlling processes where a definite temperature corresponding with some point in the manufacture of an article was required. Optical pyrometers were used for controlling the temperature of the molten metal used for making spun pipes. The lecture was well illustrated with slides loaned by the Cambridge Instrument Co. and the Foster Instrument Co. A demonstration of the various types of instruments was given at the close of the lecture. These instruments were loaned by the Stanton Ironworks Co.

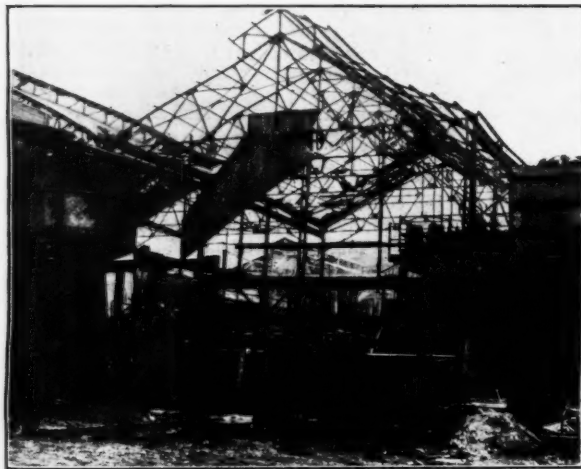
Chemical Society Meeting

At an ordinary scientific meeting of the Chemical Society, on Thursday, December 2, at 8 p.m., at Burlington House, Piccadilly, London, the following papers will be read: "Dicyanates and Dibenzates of Triphenylbismuthine and Triphenylstibine," by F. Challenger and V. K. Wilson; "The Mechanism of Citric and Oxalic Acid Formation from Sugar by *Aspergillus Niger*. Part I," by F. Challenger, V. Subramaniam and T. K. Walker.

Explosion at Hickson & Partners' Works

Two Process Workers Killed

AN explosion, which killed one man and injured a number of workpeople and private persons resident outside the works, occurred on Monday at the chemical manufacturing plant of Hickson and Partners, Ltd., at Ings Lane, Castleford. The name of the dead man is Arthur Semper (35), foreman process worker, of Frystone Road, Airedale, and among the injured were Randall Davies (29), Angel Street, Castleford, suffering from burns and shock; Charles Crowther (38), Paradise Hill, Pontefract, facial injuries and shock; and Mrs. Knowlings, Ings Lane, Castleford, severe shock. The explosion was accompanied by a blinding flash, a burst of flame, and a black pall of smoke. So great was the force of the explosion that houses over a mile away were affected by the shock, 300 houses having windows shattered. People walking about the streets



THE WORKS AFTER THE EXPLOSION.

and in their houses were thrown to the ground. Mr. B. Hickson, director of the firm, said the explosion occurred in the dinitro-phenol plant, which was situated near the River Aire at the extreme end of the works. So far as they could tell, he said, the explosion occurred in the hydro extractor which controlled the drying process of nitrophenol. What actually caused the explosion they were not able to ascertain at the moment. The extractor was seriously damaged, and it was this fact which led them to believe that it was there that the explosion took place. Such was the force of the explosion that a wooden hut ten yards from the plant was lifted bodily and hurled into the river 50 yards away. It was last seen floating intact down the river in the direction of Castleford.

Since the above was written, Randall Davies, who was a process worker, has died as a result of his injuries. It is stated that the men killed and injured were engaged in the manufacture of sodium dinitrophenate paste. A fire occurred, which was of very mysterious origin, as all sorts of tests previously applied to the paste failed to show any risk of fire.

Caustic Soda Action on Cotton Cellulose

A MEETING of the Manchester section of the Society of Dyers and Colourists was held on Friday, November 19, Mr. J. Hanney, F.I.C., presiding.

In a paper on "The action of caustic soda on cotton cellulose," by Mr. W. F. A. Ermen and Mr. S. H. Jenkins, it was stated that the mechanism of the reaction of caustic soda on cotton during mercerisation had been the subject of controversy for many years. Early observers thought that they had proved the formation of a definite compound between cellulose and caustic soda, while later workers had denied this view. The latest results published by Knecht and Platt in 1925 seemed to point again to the formation of a definite compound ($C_6H_{10}O_5$)₂. NaOH, at all strengths of caustic soda solution

between 40° Tw. and 94° Tw. The results obtained by the authors, using a refinement of Knecht and Platt's method, did not confirm this. They showed that a rapid absorption of caustic soda began at about 27° Tw., which remained approximately constant up to 50° Tw., between which points there was formed apparently a compound $C_6H_{10}O_5 \cdot 0.6 NaOH$. Above 50° Tw., they showed that absorption increased again, reaching a maximum at about 90° Tw. pointing to the formation of a compound $C_6H_{10}O_5 \cdot NaOH$. They had also determined the time required to reach a state of equilibrium with caustic soda of 50° Tw. The absorption at first was extremely rapid, and was nearly complete at the end of 30 seconds, but only reached absolute finality after about half an hour. With weaker caustic soda solutions the rate of absorption was much slower, and did not attain a maximum for several hours.

British Industries Fair Full

Overseas Minister on New Business Confidence

It is officially announced that the whole of the space in the British Industries Fair, which is to be held simultaneously in London and Birmingham from February 21 to March 4 next, had been taken with the exception of a few spaces rendered vacant in the Birmingham section by extensions of the Castle Bromwich premises. "No more applications for space in the London section at White City, Shepherd's Bush, can be considered," an official of the Department of Overseas Trade stated. "Space has been snapped up at the rate of 1,200 square feet a day lately, and the amount asked for is well in excess of what is available."

Mr. A. M. Samuel, M.P., Minister of Overseas Trade, in an interview, states:—

"The announcement which we have had to make that the London section of the British Industries Fair is 'full up' and the need for big extensions in Birmingham show that British business men are looking forward to the New Year with confidence. Remember that the whole of this exhibition space has been sold at a time of worry and uncertainty in industry. Some of the industries which have suffered heavily by the coal shortage are among the most eager to get in touch with new markets by help of the Fair, their object being to make up for lost time. They are wise. We must prepare for a 'spring offensive' in trade. We cannot afford to sit in our trenches bewailing the mud and morass of industrial trouble around us. We are determined to recover lost ground, and a forward policy is necessary. The British Industries Fair is part of that policy."

Reasons for Confidence

"There are many reasons for confidence. Empire trade is much in the public mind. Those who deal at the great stores have been impressed with the highly attractive character of the displays of Empire produce, and we know that British goods shown overseas command equal respect and admiration. The Department has been hearing encouraging news lately. I have had a report which shows that in one instance the representative of a foreign textile firm has returned home with an empty order book, because he found out from former customers that British manufacturers, for the first time since the war, were offering goods similar to his own at lower prices. There is the case of a contract for steel tubes which are required for a country in Northern Europe. British steel tubes are preferred, and the date of tendering has been put back six months to allow British firms to get over the difficulties caused by the strike and tender for the contract."

"Between now and the opening of the Fair, stock-taking will be going on in many trades. I would ask all buyers when replenishing stocks to see first if there is a British article to meet requirements. Retailers and the public, as well as manufacturers and wholesale traders, must lend their help in the coming 'trade push' if it is to succeed. Advertisements of the Fair are now appearing all over the world. Our distinguished visitors from British countries overseas will help in encouraging buyers to come to this country in the spring. The Dominions will be represented in the Fair, both as exhibitors and buyers, and it is safe to say that they will not be disappointed in either capacity."

Chemical Dealers' Losses

A MEETING of the creditors of Arthur T. Dimmock, Ltd., Imperial House, Kingsway, London, dealers in glues, gelatines, chemicals, etc., was held on Monday. Mr. W. H. Cork, accountant and auditor, occupied the chair and submitted a statement of affairs which showed ranking liabilities of £11,116 9s. 5d. The receiver for the debenture holder had informed him that the only assets were book-debts valued at £1,000, and a claim for breach of contract which had been set down at £450. The amount due to the debenture holder was £3,000. The assets would be insufficient fully to discharge the debenture holder's claim, and consequently there was not likely to be a penny for the purpose of paying the creditors a dividend. The company was registered on January 7, 1907, with a nominal capital of £3,000. The total issued capital was £1,608, all of which was allotted for cash. The company was originally formed for the purpose of dealing in glues, gelatines, and chemicals. It appeared that the company had acted as brokers in a large way for another firm, who rendered duplicate invoices. An incompetent clerk had apparently entered up a number of the duplicate invoices, and when a settlement was arrived at with the other firm, it was found that there was a difference of £9,000. That sum was utilised as a reserve account by the company, and was used at the end of 1923 in reduction of the debit balance. The accounts for 1925 had not yet been completed, but it was understood that there was a considerable loss during that year. During the last two years, the trading losses had aggregated something like £12,000.

In answer to a question, the liquidator stated that as long ago as 1924, the company's auditors called attention to the fact that the liabilities exceeded the assets.

During the discussion which took place, dissatisfaction was expressed at the position disclosed, and a resolution in favour of compulsory liquidation was proposed, but was not carried.

Eventually the meeting broke up without any resolution being passed, and consequently the voluntary liquidation of the company will be continued with Mr. Cork as liquidator.

Voluntary Liquidation of F. Hulse and Co.

AN adjourned meeting of the creditors of F. Hulse and Co., Ltd., chemical manufacturers, Old Mill, Woodlesford, near Leeds, was held on Friday, November 19, at Leeds. Mr. C. C. Murgatroyd, the liquidator, occupied the chair.

The creditors were first called together on November 12, when it was reported that the company was registered in April, 1922, with a nominal capital of £100, of which only £15 had been issued. On April 19, 1923, a debenture for £300 was registered in the names of Mr. F. Hulse and Mrs. C. M. Hulse. In February, 1926, a concern called Hulse Dyes, Ltd., was formed and was financed by F. Hulse and Co., Ltd. The subsidiary company had an issued capital of £100, with debentures of £1,500. It went into voluntary liquidation on September 20 last, and it was understood that the assets would not be sufficient to allow the debenture holders to be paid in full. The meeting was adjourned, and a committee appointed to investigate matters. The committee consisted of Mr. N. Vine, Leeds, Mr. T. A. Stoker, Leeds, and the representative of L. B. Holliday and Sons, Ltd., chemical manufacturers, Huddersfield.

The committee submitted a lengthy report on their investigations, and, after some discussion, it was decided that the British Dyestuffs Corporation, Ltd., should make an application for the compulsory liquidation of the company.

The principal creditors include: British Aluminium Co., £59; F. W. Berk and Co., Ltd., £62; British Dyestuffs Corporation, £941; Clayton Aniline Co., Ltd., £145; and L. B. Holliday and Co., £120.

Chemical Manufacturer's Bankruptcy

THE public examination of John William Freeman, trading as the Menzum Chemical Co., Bradshawfield Mill, Broad Street, Bolton, chemical manufacturer, was held recently at Bolton. It appeared that the debtor commenced business in 1918 as a chemical manufacturer. In September 1925 he sold a patent in connection with the making up of household blues, for which, he stated, he had at one time been offered £5,000. The examination was closed.

Parker's Oil Co., Ltd.

AT the statutory meeting of creditors in this voluntary liquidation, held at the Midland Hotel, Bradford, on Monday, Mr. E. E. Collier was appointed joint liquidator of the company, along with Mr. B. Bell (of William Bell and Son). Eventually a resolution was passed that the voluntary liquidation should be continued and that a committee of inspection be appointed to act with the liquidators, consisting of Mr. R. C. Laing (representing Wm. Laing), Mr. H. C. Baker (representing the Anglo-American Oil Co., Ltd.), and Mr. J. E. Abberton (representing Brigge Bros., Silsden, Ltd.). It was also proposed that the business be carried on for the time being, and in the meantime offered for sale as a going concern within the next two or three weeks. The statement of affairs showed a deficiency of £15,031 11s. 7d. The company was formed in 1924 chiefly to develop a secret process for the manufacture of a new type of lubricating oil. The new process was the invention of Mr. Jack Parker, a young director of the company. It was described at the time of its discovery as being 25 per cent. cheaper than other oils of its class and as having been satisfactorily tested in aeroplanes, commercial vehicles and cars. A further report described Mr. Parker as having received an offer of £45,000 for his process from an American oil combine, an offer which he was stated to have rejected. It is understood that the process may be offered for sale.

"Nuvola" Trade Mark Appeal Dismissed

ON Wednesday in the Chancery Division, Mr. Justice Romer delivered his reserved judgment in the appeal by Ernest J. Savage, a health food specialist, trading as the Health Centre, in Wigmore Street, Cavendish Square, London, against the refusal of the Registrar of Trade Marks to register the word "Nuvola" in classes 3 and 42. The application was opposed by the Standard Oil Co., of New Jersey, proprietors of the trade mark "Nujol," on the ground of confusion.

His Lordship, in giving judgment, said the question was whether the applicant had discharged the onus to show confusion. In appearance and sound, the word seemed to belong to the same series of trade marks, and, in his judgment, confusion would result if "Nuvola" was registered. He came to the conclusion that the applicant had left this matter in doubt, and in his opinion the Registrar was right in refusing the application. The appeal would be dismissed with costs.

Optical and Physical Exhibition

THE seventeenth annual exhibition of electrical, optical, and other physical apparatus, organised by the Physical Society and the Optical Society, at the Imperial College of Science and Technology, will be held on Tuesday, Wednesday, and Thursday, January 4, 5, and 6, 1927. The councils of the above societies have decided again to include in the annual exhibition, in addition to the well-established trade section, a research and experimental section similar to that successfully initiated in January, 1926. The groups in this section comprise: exhibits illustrating the results of recent physical research and improvements in laboratory practice; effective lecture experiments; and repetitions of famous historical experiments. Accommodation for these will be provided in rooms distinct from those devoted to the trade exhibits, and a section of the catalogue will be allotted for their description.

Canada and the Coal Merger

IT is believed that the recent fusion of the interests of the Amalgamated Anthracite Collieries, Ltd., and the United Anthracite Collieries, Ltd., is part of a great scheme conceived in the interests of West Wales and Canada, alike of enormous potential value to Swansea as a port and to the anthracite coalfield. The recent visit of Sir Alfred Mond to the Dominion was mainly concerned with this, and the official announcement of the fusion indicated that his efforts in co-operation with those of an influential Canadian group had been eminently satisfactory. The Henderson group of anthracite colliery owners is now the only one outside the bigger combine in the Welsh coalfield, and in well-informed circles at Swansea a merger in this direction is considered not at all unlikely.

Atmospheric Pollution

Dr. J. S. Owens at Birmingham

DR. J. S. OWENS, Superintendent for the Advisory Committee on Atmospheric Pollution, addressed a meeting under the auspices of the Birmingham Section of the British Association of Chemists, on Wednesday, November 3, at the University of Birmingham, on "Curious and Interesting Aspects of Atmospheric Pollution." Mr. Knapp (chief chemist, Bournville works) presided. It was necessary, Dr. Owens said, that a distinction should be drawn between deposited and suspended impurity. One method was for measuring deposit in a standard gauge, the other for estimating the matter which was so finely divided as to remain almost permanently suspended. The estimate of suspended impurity was made in two ways. The first was made by the automatic recorder. Another method adopted for examining the suspended impurity was known as the jet dust counter. Crystals in the air provided an interesting line of investigation, and the experiments showed that nearly all the smoke hazes gave numbers of rhomboid crystals, doubtless sulphates. He thought the presence of salt crystals threw light upon the initiation of the sea fogs, since certain salts would deliquesce or commence to absorb water from the surrounding air before the saturation point was reached. Experiments showed that chloride of sodium commenced to deliquesce at a relative humidity of 74 per cent. to 75 per cent. This meant that a haze of salt crystals suspended in the air would be converted into a fog of liquid drops when the relative humidity reached anything over 75 per cent. The relative humidity of deliquescence of common salt did not vary appreciably with temperature. The solubility of salts increased with rise of temperature. The factor governing the point of deliquescence was the vapour pressure of the saturated solution of the salt.

Chemical Papers at Royal Society Meeting

THE following papers of chemical interest will be read at the meeting of the Royal Society, in London, on Thursday, December 2, at 4.30: T. M. Lowry, F.R.S., and W. R. C. Coode-Adams, "Optical Rotatory Dispersion, Part III. The Rotary Dispersion of Quartz in the Infra Red, Visible and Ultra Violet Regions"; R. H. Fowler, F.R.S., and E. K. Rideal, "On the Rate of Maximum Activation by Collision for the Complex Molecules with Applications to Velocities of Gas Particles"; H. Dingle, "The Spectrum of Fluorine." The following will be read in title only: R. C. Johnson, "The Structure and Origin of the Swan Band Spectrum of Carbon"; W. A. Bone, F.R.S., "Studies upon Catalytic Combustion III"; A. Ross, "Absorption Spectra of Pyrene Derivatives in the Near Infra Red"; A. J. Bradley and J. Thewlis, "The Structure of γ -Brass"; W. Edmondson and A. Egerton, F.R.S., "The Vapour Pressure and Melting Points of Sodium and Potassium"; W. Edmondson and A. Egerton, F.R.S., "The Chemical and Other Thermal Constants of Sodium and Potassium"; W. H. George, "An X-Ray Study of Isomorphism in Simple Organometallic Series. Part I. The Tetraphenyls"; J. A. V. Butler, "The Equilibrium of Heterogeneous Systems Including Electrolytes. Part II. Equilibrium at Interfaces and the Theory of Electrocapillarity"; N. K. Adam, "A Further Note Upon 'Inter-traction'"; J. Topping and S. Chapman, F.R.S., "On the Form and Energy of Crystalline Sodium Nitrate."

Arsenic Production in Canada

CANADIAN arsenic production during the first half of 1926 amounted to 2,287,801 lb., valued at \$66,093, as compared with 2,116,141 lb. valued at \$90,242. This total includes 348,000 lb. of arsenic estimated as recoverable from the arsenical concentrates shipped by the Nickel Plate mine at Hedley, B.C., to the smelter at Tacoma, Washington, and the Ontario production from the arsenical ores of cobalt. Ontario shipments amounting to 1,939,801 lb., all shipped by the Deloro Smelting and Refining Co., Deloro, Ontario, comprised white arsenic and arsenic in speiss residues exported for treatment in foreign smelters. Exports of arsenic totalled 1,421,200 lb. Shipments during the first half of 1925 included 520,000 lb. of arsenic in concentrates and 1,155,900 lb. of white arsenic.

Sir Alfred Mond on Amalgamation

Present Need of British Industry

SIR ALFRED MOND, M.P., speaking as the guest of the Thirty Club at Claridge's Hotel, London, on Monday, referred to the new merger in the chemical industry, and said it was an interesting phenomenon. He hoped it would not be the last, but only a precursor, an example, a precedent for a new movement in British industry generally, because in his opinion it was absolutely necessary if British industry was to survive in the markets of the world. Whether we liked it or not, we had to face the fact that great groups were being formed abroad, not only in the chemical industry, but other industries as well. The chemical chiefs had not taken this new step for personal aggrandisement, or merely to make more money—though they hoped to do so—but they were determined beyond everything in presenting not only a national, but an Imperial, aspect to the whole question throughout the Empire. By factories, agencies and special companies they hoped to link together all parts of the Empire in one economic industrial whole. The potentialities and possibilities of such a business were colossal. Much as their profits had been, amounting to many millions, the past would be dimmed by the hopes and anticipations of the future. The expert financier had played too small a part in industry. The apparent need for British industry was that other industries should follow on the lines adopted by the chemical industry. He asked why they should not appoint commissions, consisting not of politicians, but of business men, to investigate and find solutions of the great problems confronting the country.

Hydrogen as Auxiliary Engine Fuel

THE use of hydrogen as an auxiliary fuel for a solid-injection fuel engine, the type which it is proposed to use in the new State airships, was the subject of a lecture by Mr. G. F. Mucklow, on Thursday, November 4, before a joint meeting of the Royal Aeronautical Society and the Institution of Automobile Engineers, at the Royal Society of Arts. Mr. Mucklow dealt with a series of experiments carried out in the engineering laboratories of Manchester University on a Crossley solid-injection fuel engine, in which small quantities of hydrogen or coal gas were introduced along with the air supply to the engine. He said that in an airship in flight, as the supply of oil fuel was consumed, a corresponding amount of hydrogen must be released. It thus became of importance to determine whether this waste hydrogen might be utilised to replace a portion of the oil fuel supplied to the engines. The maximum amount of hydrogen used was slightly more than 3 per cent. by volume of the air supply, corresponding, at the lightest load, to some 14 per cent. by weight of the oil fuel supply. Three corresponding series of trials were run, using coal gas in place of hydrogen, the maximum volume of gas employed being 5 per cent. of the air supply. Such quantities of hydrogen or coal gas could be used satisfactorily in the type of engine considered, which appeared to run more sweetly when gas was being used.

Directory of the Chemical Industries

WE have received a copy of the seventeenth (1926) edition of *Kelly's Directory of the Chemical Industries*, published by Kelly's Directories, Ltd., of 186, Strand, London (pp. 976, 30s.). The directory contains 800 headings, including chemical and chemical plant manufacturers and merchants; consulting, analytical and other chemists; chemical engineers; manufacturing, wholesale and retail druggists; essential oil makers; photographic chemical makers; and many other related firms and individuals. The entries are grouped as follows: a places section, in which, under each town, are given lists of the various classes; and a trades classification section, under the headings of London and Country respectively, the latter being subdivided into England, Scotland and Wales; Ireland; the Channel Islands; and the Isle of Man. There is a very useful list of proprietary brands and articles. The book is very fully indexed, there being indexes to towns and places, and to trades and professions, the latter being very exhaustive. Throughout the book the entries are classified under a large number of headings, so that the searcher's difficulties are reduced to a minimum. The directory is a credit to the publishers, and naturally quite indispensable to all connected with any form of chemical or pharmaceutical industry.

From Week to Week

DORMAN LONG AND CO., LTD., have re-started operations at their Britannia Steel Mills, Middlesbrough.

ALDERMAN J. W. STEVENS, senior partner in the Sheppey Glue and Chemical Works, Ltd., has been elected Mayor of Queenborough. He has been a member of the town council for twenty-five years.

DR. BOSCH and other I. G. representatives, who have been in America carrying on negotiations with regard to the exploitation of the Bergius process, are expected to visit this country on their way back to Germany.

THE CAMBRIDGE UNIVERSITY SENATE is recommended by its council to accept the offer of the Department of Scientific and Industrial Research to build and equip an extension of the low temperature research station.

BISMUTH, in a bullion with lead and silver, accumulates in the treatment of Canadian silver-cobalt ores. During the first six months of 1926 there were 6,440 lb. of this metal in the lead-silver bullion exported for treatment in foreign smelters; it was valued at \$6,440.

A FOREIGN TENDER FOR CEMENT has been accepted by the Middlesbrough Streets Committee at 43s. 1d. per ton, the lowest British tender being 50s. 2d. per ton, plus rod. for increased coal charges, which it was pointed out would be removed at the end of the coal dispute.

AT WIDNES POLICE COURT recently three men named Michael Condon, Thomas Gilligher, and Martin T. Flynn were charged with stealing six pigs of lead, value £9, from Dennis's works. They were found guilty and sentenced to imprisonment for two months with hard labour.

A FRANCO-GERMAN POTASH CONFERENCE has just been held in Munich. The text of an agreement has been arrived at, and is being studied by both parties, who will ultimately sign it in Paris. The agreement differs only very slightly from the preliminary one which was concluded at Locarno.

AT THE INQUEST on the deaths of Walter James March, foreman, and John William Griffin, works superintendent, at an explosion which occurred on Wednesday, November 17, at the Ingestone Gas Works, near Brentwood, a verdict of accidental death was returned. The coroner, Mr. H. J. Jefferies, said that the difficulty was to discover the cause of the explosion.

DR. HANS PETERSEN, working in the Vienna Radium Institute, claims to have improved Rutherford's methods of atomic disintegration to such an extent, that in one minute as many disintegrations may be detected as Rutherford's method could detect in a year. The atoms of silicon, magnesium, beryllium, and carbon (diamond) were broken down. By means of a loud speaker the collision of particles from radioactive matter with aluminium atoms, and the disintegration of the latter, is made audible.

VISCOUNT CECIL, Chancellor of the Duchy of Lancaster, speaking recently in the House of Lords in regard to disarmament, said that he entirely agreed that chemical warfare and submarines ought to be abolished altogether, but they must recognise that although on chemical warfare they might, perhaps, attain something like agreement, the problem was not so simple, because chemicals were so easily made and distributed, and some people might have doubts as to whether their limitation, however admirable, would in fact be carried out if a war took place.

APPLICATIONS ARE INVITED for the following posts: Assistant Lecturer in Agricultural Chemistry in the University of Leeds. £300. The Registrar. November 30.—Leverhulme Professor of Physical Chemistry in the University of Bristol, to fill the position rendered vacant by the resignation of Professor McBain. The Registrar. December 10.—Lecturer in Organic Chemistry in the University of Durham (Armstrong College), Newcastle-upon-Tyne. Initial salary £250-£350. The Registrar. December 1.—Research chemists and physical chemists for the Research Association of the British Paint, Colour and Varnish Manufacturers. Salary required to be stated. The Director, 8, St. Martin's Place, London, W.C.2. December 3.—Assistant Lecturer in Organic Chemistry in the University of Leeds. £350. The Registrar. December 6.

A BRITISH GLASS INDUSTRY CONVENTION and exhibition was referred to by Mr. W. Butterworth in his presidential address to the Society of Glass Technology, at the recent anniversary meeting at Sheffield. The society, said Mr. Butterworth, had a scheme of this sort in mind, and was only waiting until the strike difficulties were past. The idea was to associate with a great convention in London the organisation of a fully representative glass exhibition. The two projects together, embracing every phase of glass manufacture, scientific, technological, industrial and artistic, should give an impetus to the industry. Allied bodies, such as the Optical Association, the Society of Chemical Industry, the Glaziers' Company, the British Society of Master Glass Painters, the Glass Sellers' Company, the Spectacle Makers' Company, etc., would be invited to co-operate.

SIR WILLIAM BRAGG, Fulleren professor of chemistry at the Royal Institution, gave the first of four lectures on "The Imperfect Crystallisation of Common Things," at the Institution on Tuesday.

MR. C. R. DELONG, chief of the U.S.A. Chemical Division of the Tariff Commission, is resigning his appointment to become associated with the Federal Phosphorus Co. in connection with the development of new products.

THE AGREEMENT existing between the Shipping Merchants' Committee of the Manchester Chamber of Commerce and the Piece Dyers' Association, will, by mutual arrangement, be finally terminated on December 31.

IODINE produced in Java in 1925, states the United States Assistant Trade Commissioner in Batavia, is estimated at approximately 60,000 kilos. Exports abroad consist for the most part of copper iodide, the principal buyer being Great Britain.

PROFESSOR A. C. D. RIVETT has been offered the position of chief executive officer of the Australian Council for Scientific and Industrial Research, at a salary of £1,500 a year. He is now conferring with the authorities of the University of Melbourne in regard to this offer.

DR. CHARLES DHERE, professor of physiology at the University of Freiburg, Switzerland, has been awarded the Longchamps Prize of the Paris Académie des Sciences (4,000 fr.) for his physico-chemical studies on albumins and on the purification of colloids by electro-dialysis.

BRITISH FERRO-MANGANESE MANUFACTURERS are, according to a recent statement, on the point of amalgamating. The statement was made by Mr. Robert Miller at a recent meeting of the Bengal-Nagpur Railway, which has greatly assisted in the development of the Indian manganese ore industry. If the expected combination occurs, the principal Indian manganese mining company will be an interested party.

RECENT WILLS INCLUDE: Mr. Henry Cochrane, of Hale, Cheshire, senior director of the Peel Dyeworks, Newton Heath, Manchester. £29,290.—Sir J. Wakefield Weston, of Enyeat, Endmoor, Kendal, Westmorland, Conservative M.P. for Westmorland from 1910 to 1923, a director of Nobel Industries, Ltd., £60,407.—Mr. Oliver Matthews Row, of Flixton, Lancs, chairman of Royles, Ltd., engineers, of Irlam, and a past president of the Institute of Heating and Ventilating Engineers (net personalty £16,834), £18,813.

SHEFFIELD UNIVERSITY'S ANNUAL REPORT, just issued, states that the fuel department, in collaboration with the metallurgical department, has undertaken to carry out a programme of work drawn up by the newly constituted Blast Furnace Coke Research Committee (Yorkshire and Derbyshire coalfields). Research has been continued on the constitution of coal, on gaseous explosions, and on the electrical ignition of gases. The testing of flame-proof electrical apparatus continues to form an important part of the work of the mining department.

"DISSOLVED ACETYLENE" was the title of a lecture given at the Huddersfield Technical College, on Friday, November 19, by Mr. W. C. Freeman, of Liverpool. Mr. Freeman outlined the historical researches which led to the production of carbides and the accidental discovery of calcium carbide in 1892. He touched upon the many industrial applications of dissolved acetylene, not only in conjunction with oxygen for the cutting and welding of metals with very high temperature, but with atmospheric air as the supporter of combustion of the substance for low temperature operations.

MR. F. H. CARR, president of the Society of Chemical Industry, at a meeting of the Liverpool Section which he addressed (as reported elsewhere in this issue), awarded various prizes to Liverpool students. Mr. F. Irving, B.Sc., received the Leverhulme Prize, awarded for the first time. The prize was founded by the late Viscount Leverhulme, who delivered the Messel Memorial Lecture at the annual meeting of the Society of Chemical Industry in Liverpool in 1924. There is a fee of 50 guineas for the lecture, and this sum was invested by Viscount Leverhulme so that the proceeds—10 guineas a year—should be devoted to a prize for the best chemistry student at the University in any particular year. The winners of the Society of Chemical Industry Prizes were the two best students at the Liverpool City Technical School. The first prize (£7) was won by Mr. Robert Ward, and the second prize (£3) by Mr. John Herbert Pennington.

Obituary

MR. ALLAN TURTON, of 14, Frederick Street, Widnes, on November 18. He worked as a boy at Dennis's chemical works, where he obtained experience as a chemist. Afterwards he went to Chile, but was later employed in Flint and London.

PROFESSOR ETTORE MOLINARI, the well-known Italian technologist, of the Polytechnic at Mailand, on November 9. He would shortly have taken over the direction of the Ronzoni Research Institute, erected at his instigation. He was the author of various well-known treatises (including a treatise on general, applied, and industrial chemistry), which have appeared in English translations.

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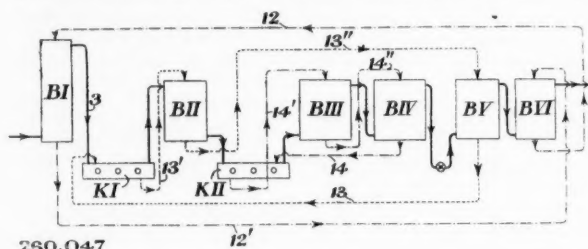
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The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

260,047. SULPHURIC ACID, PROCESS FOR THE PRODUCTION OF. M. S. Stutchbury, 7, Gracechurch Street, London, E.C.3. From Metallbank und Metallurgische Ges. Akt-Ges., 45, Bockenheimer Anlage, Frankfurt-on-Main, Germany. Application date, July 22, 1925. Addition to 149,648, as modified by 187,016.

Specification No. 149,648 (See THE CHEMICAL AGE, Vol. III p. 543) describes the production of sulphuric acid without the use of lead chambers and towers. A solution of nitrosyl sulphuric acid in sulphuric acid is sprayed into gases containing sulphur dioxide in such a way that throughout the whole system the nitrosyl sulphuric acid is always present in excess,



260,047

so that the solution does not lose its oxidation activity. The nitrosyl content of the solution is constantly maintained by washing out the evolved nitrous gases from the gases by a solution of nitrosyl sulphuric acid in sulphuric acid of 54° to 58° Bé. This solution is returned to the system with the addition of water or nitric acid and nitrosyl sulphuric acid is withdrawn and denitrated to obtain commercial sulphuric acid to an amount corresponding to the amount of sulphuric acid produced. In Specification No. 187,016 (see the CHEMICAL AGE, Vol. VII, p. 714) the nitrosyl sulphuric acid is supplied above 58° Bé. and the central part of the plant is irrigated with nitrosyl sulphuric acid in weaker sulphuric acid, but above 54° Bé. In this invention, mechanical mixing chambers and irrigation chambers are alternatively employed only in the fore part of the plant, and in the rear part of the plant only irrigation chambers are employed.

In the plant illustrated irrigation chambers B I to B VI are employed. The hot-furnace gases pass through the chamber B I to a mixing apparatus K I, provided with three Schmiedel rollers, and thence to B II, and a similar mixing apparatus K II. The gases then pass in succession through the irrigation chambers B III, B IV, B V, B VI. A chamber B I is irrigated with nitrosyl sulphuric acid which is obtained from the chamber B VI through conduit 12, and the denitrated acid passes back to chamber B VI through conduit 12'. Acid of 58° to 61° Bé. passes from the chamber B V through conduit 13 to mixing apparatus K I, where nitrosyl sulphuric acid of 58° to 61° Bé. is formed, and passes through conduit 13' to chamber B II, from which it returns at 50° to 61° Bé. through conduit 13'' to chamber B V. The apparatus K I and chambers B II and B V form an intermediate cycle. The mixing apparatus K II receives nitrosyl sulphuric acid of 54.5° to 55° Bé. from chamber B IV through pipe 14, and the outflowing nitrosyl sulphuric acid passes through pipe 14, to chamber B III, from which it returns to chamber B IV through pipe 14'. The apparatus K II and chambers B III and B IV form the inner cycle of weaker acid. A slight modification of the process is involved if cold or poor gases are employed.

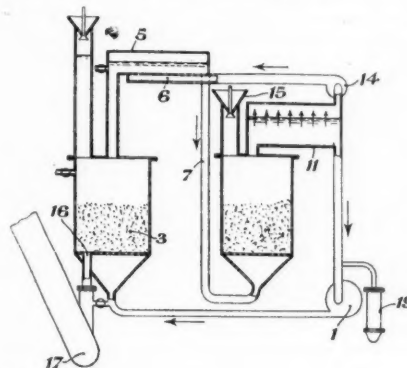
260,129. DESULPHURISING NAPHTHALENE OR PARAFFIN, PROCESS FOR. K. Bube, 16, Prinzenstrasse, Halle-Saale, Germany. Application date, December 22, 1925.

Solid hydrocarbons can be purified by treatment with a large quantity of alcohol, but in this invention only a small amount of alcohol or its homologues or acetone are necessary

if the material in the form of scales, chips, or the like is pugged with the alcohol. The amount of alcohol is insufficient to dissolve any appreciable amount of the material. In an example, crude oily naphthalene containing 90 per cent. naphthalene and 2 per cent. sulphur is pugged with the same amount of alcohol and filtered by suction, the treatment being repeated twice. The naphthalene is heated to remove alcohol and then contains 0.2 per cent. of sulphur, a yield of 85 per cent. being obtained calculated on the naphthalene obtained as residue from the hot naphthalene. Crude paraffin is treated in a similar manner.

260,133. REFINING OR SEPARATING SOLUBLE SUBSTANCES BY CRYSTALLISATION, PROCESS FOR. Aktieselskapet Kryстал, Uranienborgveien 26, Oslo, Norway, and F. Jere-miasen, Kirkeveien 60, Oslo, Norway. Application date, January 5, 1926.

A centrifugal pump 1 forces supersaturated salt solution upwards through granules 3 of salt, which are maintained in suspension. Sodium chloride precipitates on these granules and the solution passes in a slightly supersaturated condition to a vessel 5, into which steam is injected through a pipe 6. The solution is thus heated and diluted and passes through pipe 7 to a vessel 10 containing rock salt granules where it again becomes saturated. The solution then evaporates in chamber 11 where it becomes slightly supersaturated and is returned to the pipe 1. The steam passes to a compressor 14 and thence to the pipe 6. Rock salt is supplied through the hopper 15 as required. A stream of liquid is supplied through



260,133

the pipe 16 to maintain the granules in suspension, but when these reach the desired size they sink to an elevator 17. The circulating solution finally becomes saturated with impurities, but no precipitation of these takes place in the absence of granules of the same substance. Any precipitation of these substances passes to a separator 19. A modification of this apparatus is described for recovering more than two substances simultaneously in a coarse granular form from the mixed product.

260,159. NITROGENOUS DERIVATIVES OF TERPENE ALCOHOLS. R. Wolfenstein, 7B, Luciusstrasse, Dahlem, Berlin. Application date, March 24, 1926.

Esters of terpene alcohols can be obtained in a pure state by the condensation of terpene alcohols with carboxylic acids of the pyridine group in the presence of a condensing agent. In an example, a mixture of nicotinic acid and menthol in a solvent such as benzol, together with phosphorus oxychloride are heated in a water bath under a reflux condenser. The mixture is then cooled and made alkaline with soda solution. The benzol is removed and the residue is dissolved in ether and treated with a solution of sulphuric acid in ether. The sulphate of the new compound is precipitated in a pure form. Other

examples are given in which the menthol is replaced by borneol, and also in which picolinic acid is employed.

260,186. NITRO COMPOUNDS, PROCESS FOR REDUCING. W. Carpmal, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date June 10, 1926.

It is known that nitro compounds can be reduced to amines by passing the vapour of the nitro compound with hydrogen over silica gel, but the yield of amine is very small. In this invention the gel is impregnated with a heavy metal, especially iron, copper, or nickel or a salt or oxide of these. In an example a small amount of copper hydroxide is precipitated on granular silicic acid gel, and is employed for treating a mixture of nitrobenzene and hydrogen in excess at 200° C. The copper compound is reduced to metallic copper, and the aniline obtained is condensed. If a high boiling substance such as naphthalene is treated, the process is carried out at a reduced pressure. Other examples are given of the production of *o*-, *m*-, and *p*-toluidine, α -naphthylamine, 3-amino-pyridine, and methylamine.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 237,294 (Farbwerke vorm. Meister, Lucius, und Brüning), relating to manufacture of vat dyestuffs, see Vol. XIII, p. 333; 245,762 (Soc. d'Etudes Minières et Industrielles), relating to manufacture of metallic nitrides and lithium nitride, see Vol. XIV, p. 255; 248,339 (Esseff Chemische Industrie-U. Handels Akt.-Ges.), relating to alkaline earth salts of the carboxylic acids of aromatic sulphon-halo-alkali amides, see Vol. XIV, p. 462; 254,310 (F. Bensa), relating to nitriles of the perylene series, see Vol. XV, p. 233.

International Specifications not yet Accepted

258,828. SULPHUR, SULPHURETTED HYDROGEN, AND MAGNESIUM OXIDE. Salzwirk Heilbronn Akt.-Ges., T. Lichtenberger, and K. Flor, Heilbronn, Germany. International Convention date, September 25, 1925. Addition to 251,942.

Specification 251,942 (see THE CHEMICAL AGE, Vol. XV, p. 88) describes the treatment of alkaline earth sulphates, dissolved in molten sodium chloride, with coke to obtain sulphide. In this invention, magnesium chloride is also added to the mixture to accelerate the conversion of the alkaline earth sulphides into chlorides. Magnesium oxide is deposited in the melt and is removed. Treatment of the melt with water vapour accelerates the evolution of hydrogen sulphide. The remaining melt can be used for dissolving a further quantity of alkaline earth sulphate.

258,846. PURIFYING OILS. Allgemeine Ges. für Chemische Industrie, 61, Martin Lutherstrasse, Schöneberg, Berlin. International Convention date, September 26, 1925.

Kerosene, gas oil, or lubricating oil is treated in a tower with gases from a sulphur or iron pyrites kiln as a preliminary to purification with liquid sulphur dioxide.

258,854. DYES. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, September 24, 1925.

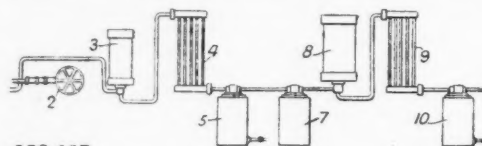
Products suitable for dyeing animal fibres with the aid of chrome mordants are obtained by treating with formaldehyde and bisulphite or with formaldehyde sulphurous acid, the amino-*o*-oxyazo dyes obtained by reducing the azo dyes from the nitrated 1-diazo-2-oxy-naphthalene-4-sulphonic acid and a naphthol. Some examples are given.

258,887. PURIFYING HYDROGEN; AMMONIA SYNTHESIS; HYDROGENATION OF OILS. Lazote, Inc., 1007, Market Street, Wilmington, Del., U.S.A. (Assignees of R. Williams, 1205, West 13th Street, Wilmington, Del., U.S.A.) International Convention date, September 24, 1925.

Hydrogen-containing gases are freed from carbon monoxide by passing under pressure over a catalyst capable of forming methyl alcohol, and then condensing out the alcohol while the gases are still under pressure. The catalyst may be zinc, zinc and chromium, zinc and copper, or iron. Impurities such

as water, methane, and sulphur are removed with the alcohol. Any remaining carbon monoxide is removed by passing the gas over a methane-forming catalyst or an absorbent. If the gas speed is reduced, the temperature increased, or alkali oxides added to the catalyst, oily products and higher alcohols are obtained.

A mixture of nitrogen and hydrogen with 2 per cent. of carbon monoxide is forced at 900 atmospheres by a pump 2



258,887

through a catalyst chamber 3 containing zinc oxide obtained by igniting precipitated zinc carbonate, or zinc and chromium oxides obtained by adding ammonia to zinc and chromium nitrates. The impurities dissolved in oxygenated compounds are separated out in a water-cooled condenser 4 and collected in 5. The gases pass through active carbon in a vessel 7 and then to a vessel 8 containing a catalyst obtained by fusing pure Fe_2O_3 with 2 per cent. of pure alumina and crushing the product. The ammonia produced is liquefied in a water-cooled condenser 9 and collected in 10, and the gases are recirculated through the ammonia converter. Hydrogen required for the hydrogenation of oils may be purified by this apparatus.

258,894. DYES. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, September 25, 1925.

Tetraozotised 2 : 2'-dihalogen- or 2 : 2'-dialkyl-4 : 4'-diaminodiphenyl is coupled in alkaline solution with phenylene-diamine-disulphonic acid and 2-amino-8-naphthol-6-sulphonic acid or its *N*-substituted derivatives in equimolecular proportions. The products give reddish-brown shades on wool. Some examples are given.

258,901. BORNEOL AND ISOBORNEOL ESTERS. G. Austerweil, 113, Boulevard Jean Jaures, Boulogne-sur-Seine, France. International Convention date, September 25, 1925.

Esters of borneol and isoborneol are obtained by treating nopine with an organic acid such as benzoic acid diluted in a neutral solvent such as xylene, and at a temperature below 150° C. Toluene and pinene can also be used as solvents.

258,910. BZ2-HYDROXYBENZANTHRONE. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. (Assignees of Farbwerke vorm. Meister, Lucius, und Brüning, Höchst-on-Main, Germany.) International Convention date, September 28, 1925. Addition to 224,522. (See THE CHEMICAL AGE, Vol. XII, p. 60.)

BZ1-amino-BZ2-nitrobenzantrone is diazotised with nitrosyl sulphuric acid, poured on to ice, and the paste run into boiling alcohol. The BZ2-hydroxybenzantrone is purified by dissolving in caustic alkali and reprecipitating.

LATEST NOTIFICATIONS.

261,342. Process for protecting wool from damage by bacteria. I. G. Farbenindustrie Akt.-Ges. November 10, 1925.

261,377. Manufacture of new complex metal alcoholates. Chemische Fabrik auf Actien (vorm. E. Schering). November 12, 1925.

261,383. Manufacture of condensation products derived from thionaphthene-2 : 3-dicarboxylic acid. I. G. Farbenindustrie Akt.-Ges. November 10, 1925.

261,385. Process for the sulphurising of fatty acids and their esters. Böhme Akt.-Ges., H. T. November 11, 1925.

261,393. Manufacture and production of hydrocarbons of the benzene series. I. G. Farbenindustrie Akt.-Ges. November 12, 1925.

261,400. Manufacture of condensation products of the anthracene series. I. G. Farbenindustrie Akt.-Ges. November 13, 1925.

261,406. Manufacture of polymerised vinyl compounds. Consortium für Elektro-Chemische Industrie Ges. November 14, 1925.

261,422. Manufacture of anthraquinone nitriles. I. G. Farbenindustrie Akt.-Ges. November 13, 1925.

261,423. Process for dyeing cellulose esters. Soc. of Chemical Industry in Basle. November 14, 1925.

Specifications Accepted with Date of Application

- 244,727. Concentrating latex, Process of and apparatus for. K. D. P. Ltd. December 20, 1924.
- 246,482. Naphthoquinones, Manufacture of derivatives of. Soc. Anon. des Matières Colorantes et Produits Chimiques de Saint Denis, R. Lantz, and A. Wahl. January 21, 1925.
- 249,510. Mixtures of alkali hypochlorite and alkali chloride in solid form, Process for the manufacture of. A. Oppe. March 23, 1925.
- 250,219. Xanthate of cellulose, Process of manufacture of. P. Moro. March 31, 1925.
- 250,893. Acyl resorcinols. Production of. Sharpe and Dohme. April 16, 1925.
- 260,638 and 260,647. Dyes and dyeing. R. Wylam, J. E. G. Harris, J. Thomas, and Scottish Dyes, Ltd. April 30, 1925, and June 4, 1925.
- 260,639 and 260,640. Stable iron carbonyl compositions, Manufacture and production of. J. Y. Johnson. (*Badische Anilin und Soda Fabrik.*) May 2, 1925.
- 260,646. Solid ferrous material, Processes of treating. S. Westberg. June 2, 1925.
- 260,661. Vanadium compounds from iron ores containing vanadium and titanium, Method of recovering. B. P. F. Kjellberg. July 30, 1925.
- 260,672. Alloys and their uses. W. P. Dreaper. August 5, 1925.
- 260,682. Preparations suitable for developing baths for use in dyeing. J. Y. Johnson. (*Badische Anilin und Soda Fabrik.*) August 5, 1925.
- 260,686. Tar acids from ammonia liquor and other liquors, Removal of. H. W. Robinson and D. W. Parkes. August 7, 1925.
- 260,789. Wrought iron, Manufacture of. G. G. Gedda. November 28, 1925.
- 260,830. Chromium compounds of azo dyestuffs, Manufacture of. O. Y. Inray. (*Soc. of Chemical Industry in Basle.*) February 22, 1926.
- 260,835. Alloy steels. H. B. Kinnear. March 2, 1926.
- 260,885. Chrome alums, Manufacture of. W. Carpmæl. (*I. G. Farbenindustrie Akt.-Ges.*) May 28, 1926.
- 260,888. Working with reducing gases in apparatus made of copper or its alloys, Method of and apparatus for. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*) June 2, 1926.
- 260,908. Solid polymers of formaldehyde, Manufacture of. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*) June 26, 1926.
- I. G. Farbenindustrie Akt.-Ges. Isatins of the naphthalene series. 29,174. November 18.
- I. G. Farbenindustrie Akt.-Ges. Manufacture of amines of the cyclo-hexane series. 28,907. November 16. (Germany, November 17, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Process for recovery of dehydrogenation products, etc. 28,746. November 15. (Germany, November 27, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Manufacture of anthraquinone nitriles. 28,782. November 15. (Germany, November 13, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Condensation products, etc., of the benzanthrone series. 29,048. November 17. (Germany, November 17, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Manufacture of cyclohexylamines. 29,163. November 18. (Germany, November 19, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Manufacture of azo-dyestuffs. 29,275. November 19. (Germany, November 19, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Manufacture of pyrazolone-azo-dyestuffs. 29,276. November 19. (Germany, November 19, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Conversion of moist solid fuels into valuable liquid products. 29,369. November 20. (Germany, November 26, 1925.)
- Omnium des Industries Chimiques Procédés Tocco et Landi. Production of synthetic ammonia and acetylene. 28,882. November 16. (France, November 27, 1925.)
- Omnium des Industries Chimiques Procédés Tocco et Landi. Production of ammonia. 29,027. November 17. (France, June 15.)
- Rhenania-Kunheim Verein Chemischer Fabriken Akt.-Ges. Production of solid ammonium carbonate. 29,390. November 20.
- Soc. Eno-Tartarica Italiana. Production of cream of tartar, etc. 28,671. November 15.
- Soc. of Chemical Industry in Basle. Process for dyeing cellulose esters. 28,783. November 15. (Switzerland, November 14, 1925.)
- Titan Co. Aktieselskabet and Wade, H. Manufacture of titanium compounds. 28,948. November 16.
- Titan Co. Aktieselskabet. Manufacture of titanium compounds. 29,082. November 17.
- Trautmann, J. Vessels for carrying out chemical, etc., processes. 29,262. November 19. (Germany, November 19, 1925.)
- Trautmann, J. Method of carrying out chemical, etc., processes. 29,402, 29,403. November 20. (Germany, November 21, 1925.)
- Union Akt.-Ges. für Metallindustrie. Centrifugal separators, etc. 29,253. November 19. (Germany, November 30, 1925.)

Applications for Patents

- Battegay, M. Nitration process. 29,299. November 19. (France, November 24, 1925.)
- Blond, N. Waterproofing fabrics. 28,823. November 16.
- Boedecker, F. Preparation of vanillin and iso-vanillin. 28,893. November 16.
- British Dyestuffs Corporation, Ltd., and Horsfall, R. S. Protection of animal fibres. 28,914. November 16.
- Carpmael, W. (Chemische Fabrik auf actien vorm. E. Schering). Manufacture of disodium salts of 4-imino-methylenesulphurous acid 2-metal mercaptobenzene-1-sulphonic acids. 29,175. November 18.
- Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Manufacture of dyes. 28,918. November 16.
- Carpmael, W. Isatins of the naphthalene series. 29,174. November 18.
- Carstairs, W. W. Waterproof garment. 29,384. November 20.
- Carstairs, W. W., and Martin and Co., J. Process of waterproofing fabrics. 29,385. November 20.
- Chemische Fabrik auf actien vorm. E. Schering. Manufacture of disodium salts of 4-imino-methylenesulphurous acid 2-metal mercaptobenzene-1-sulphonic acids. 29,175. November 18.
- Collins, R. K. Refining hydrocarbons. 28,922. November 16.
- Crundall, S. F. W., and Spence and Sons, Ltd., P. Preparation of titanium compounds. 28,993. November 17.
- Crundall, S. F. W., and Spence and Sons, Ltd., P. Treatment of titanium compounds. 28,994. November 17.
- Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler. Recovery of metals and halogens. 29,187. November 18.
- Drey, N. Electro-chemical reactions upon organic compounds. 29,366. November 20.
- Franklin, R. G., and Synthetic Ammonia and Nitrates, Ltd. Catalysts for production of methanol, etc. 28,689. November 15.
- General Electric Co., Ltd. Preparation of chromium powder, etc. 29,144. November 18.
- General Electric Co., Ltd., and Smithells, C. J. Manufacture of chromium, etc. 29,149. November 18.
- I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Apparatus for stirring and mixing. 28,745. November 15.
- I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of hydrogen, etc., from hydrocarbons. 28,747. November 15.
- I. G. Farbenindustrie Akt.-Ges. Manufacture of dyes. 28,918. November 16.

Co-ordination of Societies

MR. G. W. MULLINS, secretary of the Non-ferrous Industries in Birmingham, discussed the work of scientific societies at a meeting on Wednesday, November 3, of the Birmingham and Midland Institute Scientific Society. He pointed out that considering the volume of industry in the Birmingham district which rested upon such sciences as metallurgy, engineering, chemistry, etc., it was clear that these societies ought to possess a far greater membership, and to enjoy a far larger audience at their meetings. Turning to science as regards research, it was not the research workers themselves who needed a society, but the ordinary man and the technical worker, because without such societies it was impossible for the latter to keep in touch with modern scientific progress. Perhaps the greatest function of scientific societies lay in the third aspect of science; for here they could interpret both technical and pure science to the ordinary citizen, and to students in other fields. If any of these asked themselves what exact knowledge they possessed of the technical and scientific industries upon which modern civilisation rested, they would probably be ashamed at the answers they would be compelled to give. This was not as it should be. There was need for co-ordination between scientific societies, so that there should be neither overlapping nor omission of any great subject.

German Rivals of the I.G.

THE German potash industry, which needs a huge amount of nitrogen, and has hitherto bought this product almost exclusively from the I.G. Farbenindustrie, is negotiating a contract with the Klöckner-Werke for the delivery of nitrogen produced by the Ruhr coal mines. Should the latter come to terms with the potash syndicate a struggle between this group and the I.G. Farbenindustrie must result, which will at once put an end to any co-operation in the question of the liquefaction of coal between the Ruhr coal mines and the I.G. Farbenindustrie, which was hitherto thought probable.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID BORIC, COMMERCIAL.—Crystal, £37 per ton, Powder, £39 per ton.
 ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
 ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° TW., Crude Acid, 60s. per ton. 168° TW., Arsenical, £5 10s. per ton. 168° TW., Non-arsenical, £6 15s. per ton.
 AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
 BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.
 BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
 BORAX, COMMERCIAL.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
 CALCIUM CHLORIDE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d carr. paid.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 11d. to 3s. 4d. per gall.; pyridinised industrial, 3s. 1d. to 3s. 6d. per gall.; mineralised, 4s. to 4s. 4d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE.—4½d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.
 SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
 SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
 SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
 SODIUM BICHROMATE.—3½d. per lb.
 SODIUM BISULPHITE POWDER, 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.
 SODIUM CHLORATE.—2½d. per lb.
 SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
 SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.
 SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
 SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
 SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
 SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7d. to 7½d. per lb. Crude 60's, 1s. 5d. to 1s. 6d. per gall.
 ACID CRESYLIC 99/100.—2s. 6d. per gall. Steady. 97/99.—2s. to 2s. 1d. per gall. Pale, 95%, 1s. 10d. to 2s. per gall. Dark, 1s. 9d. to 1s. 10d. per gall.
 ANTHRACENE.—A quality, 2½d. to 3d. per unit. 40%, 3d. per unit.
 ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.
 BENZOL.—Crude 65's, 1s. 4d. to 1s. 5d. per gall., ex works in tank wagons. Standard Motor, 2s. to 2s. 3d. per gall., ex works in tank wagons. Pure, 2s. 3d. to 3s. per gall., ex works in tank wagons. Scarce and firm.
 TOLUOL.—90%, 2s. to 3s. 3d. per gall. Firm. Pure, 2s. 3d. to 3s. 6d. per gall.
 XYLOL.—2s. 3d. to 3s. per gall. Pure, 4s. per gall.
 CREOSOTE.—Cresylic, 20/24%, 10½d. per gall. Standard specification, 6½d. to 9d.; middle oil, 7½d. to 8d. per gall. Heavy, 8½d. to 9d. per gall.
 NAPHTHA.—Crude, 10d. to 1s. 1d. per gall. according to quality. Solvent 90/160, 2s. to 2s. 1d. per gall. Solvent 95/160, 2s. 1d. to 2s. 2d. per gall. Solvent 90/190, 1s. 3½d. to 1s. 4d. per gall.
 NAPHTHALENE CRUDE.—Drained Creosote Salts, £4 10s. to £5 10s. per ton. Whizzed or hot pressed, £5 10s. to £8 10s. per ton.
 NAPHTHALENE.—Crystals, £11 10s. to £12 10s. per ton. Quiet. Flaked, £12 10s. to £13 per ton, according to districts.
 PITCH.—Medium soft, 182s. 6d. to 205s. per ton, according to district.
 PYRIDINE.—90/140, 12s. 6d. to 17s. per gall. Nominal. Heavy, 7s. to 10s. per gall. 90/180, 9s. to 9s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. 6d. per lb. 100%.
 ACID BENZOIC.—1s. 9d. per lb.
 ACID GAMMA.—8s. per lb.
 ACID H.—3s. 3d. per lb. 100% basis d/d.
 ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.
 ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.
 ACID SULPHANILIC.—9d. per lb. 100% basis d/d.
 ANILINE OIL.—9½d. per lb. naked at works.
 ANILINE SALTS.—9½d. per lb. naked at works.
 BENZALDEHYDE.—2s. 1d. per lb.
 BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
 BENZOIC ACID.—1s. 8½d. per lb.
 o-CRESOL 29/31° C.—3½d. to 4d. per lb.
 m-CRESOL 98/100%.—2s. 3d. per lb.
 p-CRESOL 32/34° C.—2s. 3d. per lb.
 DICHLORANILINE.—2s. 3d. per lb.
 DIMETHYLANILINE.—2s. per lb. d/d. Drums extra.
 DINITROBENZENE.—9d. per lb. naked at works.
 DINITROCHLOROBENZENE.—£84 per ton d/d.
 DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
 DIPHENYLAMINE.—2s. 10d. per lb. d/d.
 a-NAPHTHOL.—2s. per lb. d/d.
 B-NAPHTHOL.—11d. to 1s. per lb. d/d.
 a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.
 B-NAPHTHYLAMINE.—3s. per lb. d/d.
 o-NITRANILINE.—5s. 9d. per lb.
 m-NITRANILINE.—3s. per lb. d/d.
 p-NITRANILINE.—1s. 9d. per lb. d/d.
 NITROBENZENE.—7d. per lb. naked at works.
 NITRONAPHTHALENE.—10d. per lb. d/d.
 R. SALT.—2s. 4d. per lb. 100% basis d/d.
 SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.
 o-TOLUIDINE.—9d. per lb. naked at works.
 p-TOLUIDINE.—2s. 2d. per lb. naked at works.
 m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 10s. to £10 per ton. Scarce. Grey, £17 10s. per ton. Liquor, 9d. per gall. 32° Tw.
 CHARCOAL.—£9 to £10 per ton and upwards, according to grade and locality. Very scarce and in better demand.
 IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall. 24° Tw.
 RED LIQUOR.—9½d. to 1s. per gall.
 WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.
 WOOD NAPHTHA, MISCIBLE.—3s. 10d. to 4s. per gall., 60% O.P. Solvent, 4s. 2d. to 4s. 3d. per gall., 40% O.P. Both scarce and in good demand.
 WOOD TAR.—£3 to £5 per ton and upwards, according to grade.
 BROWN SUGAR OF LEAD.—£41 10s. to £42 per ton. Fair market.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5½d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—2s. per lb.
 BARYTES.—£3 10s. to £6 15s. per ton, according to quality.
 CADMIUM SULPHIDE.—2s. 9d. per lb.
 CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.
 CARBON BLACK.—5½d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
 DIPHENYLGUANIDINE.—3s. 9d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.
 LAMP BLACK.—£35 per ton, barrels free.
 LEAD HYPOSULPHITE.—9d. per lb.
 LITHOPONE, 30%.—£22 10s. per ton.
 MINERAL RUBBER "RUBPRON".—£13 12s. 6d. per ton f.o.r. London.
 SULPHUR.—£9 to £11 per ton, according to quality.
 SULPHUR CHLORIDE.—4d. per lb., carboys extra.
 SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.
 THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.
 THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
 VERMILION, PALE OR DEEP.—5s. 3d. per lb.
 ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, 80% B.P.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.

ACID, BORIC B.P.—Crystal, £43 per ton; Powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 3½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P.—1s. 4½d. to 1s. 5½d. per lb. Firm. Technical.—1s. per lb.

ACID, TANNIC B.P.—2s. 9d. to 2s. 11d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%.

AMIDOL.—9s. 6d. per lb., d/d.

ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—11s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimed: lump, 1s. per lb.; powder, 1s. 3d. per lb.

ASPIRIN.—2s. 4d. to 2s. 5d. per lb.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—8s. 9d. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 3d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 3d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 6d. to 12s. 6d. per lb., all above bismuth salts, according to quantity.

BISMUTH NITRATE.—6s. 9d. per lb.

BISMUTH OXIDE.—13s. 9d. per lb.

BISMUTH SUBCHLORIDE.—11s. 9d. per lb.

BISMUTH SUBGALLATE.—9s. 9d. per lb.

BORAX B.P.—Crystal, £27 per ton; Powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 8½d. to 1s. 10d. per lb.; sodium, 1s. 11d. to 2s. 1d. per lb.; ammonium, 2s. 2d. to 2s. 3d. per lb., all spot.

CALCIUM LACTATE.—1s. 4d. to 1s. 5d.

CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—6s. 6d. to 7s. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.

IRON PERCHLORIDE.—22s. per cwt., 112 lb. lots.

MAGNESIUM CARBONATE.—Light Commercial, £33 per ton net.

MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

MENTHOL.—A.B.R. recrystallised B.P., 18s. 9d. per lb. net; Synthetic, 10s. 6d. to 12s. per lb., according to quantity; Liquid (95%), 12s. per lb.; Detached Cryst., 15s. per lb.

MERCURIALS.—Red Oxide, 6s. 5d. to 6s. 7d. per lb., levig., 6s. to 6s. 1d. per lb.; Corrosive Sublimate, Lump, 4s. 8d. to 4s. 10d. per lb.; Powder, 4s. 2d. to 4s. 3d. per lb.; White Precipitate, 4s. 10d. to 5s. per lb.; Powder, 4s. 11d. to 5s. 1d. per lb.; Extra Fine, 5s. 1d. to 5s. 2d. per lb.; Calomel, 5s. 3d. to 5s. 5d. per lb.; Yellow Oxide, 5s. 10d. to 5s. 11d. per lb.; Persulph, B.P.C., 5s. 1d. to 5s. 2d. per lb.; Sulph. nig., 4s. 10d. to 4s. 11d. per lb.

METHYL SALICYLATE.—1s. 9d. per lb.

METHYL SULPHONAL.—15s. 6d. per lb.

METOL.—11s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 2d. to 1s. 4d. per lb.

PHENACETIN.—3s. 9d. to 4s. per lb.

PHENAZONE.—5s. 9d. to 6s. per lb.

PHENOLPHTHALEIN.—3s. 9d. to 4s. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—81s. per cwt., less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.

QUININE SULPHATE.—2s. per oz., 1s. 8d. to 1s. 9d. per oz. in 100 oz. tins.

RESORCIN.—4s. to 4s. 3d. per lb., spot.

SACCHARIN.—55s. per lb.

SALOL.—3s. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb. B.P.C., 1923.—2s. 1d. to 2s. 2d. per lb. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb. carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—80s. to 85s. per cwt., according to quantity.

SODIUM SALICYLATE.—Powder, 1s. 10d. to 1s. 11d. per lb. Crystal, 1s. 11d. to 2s. per lb. Strong demand and firm.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—10s. 6d. per lb.

TARTAR EMETIC, B.P.—Crystal or Powder, 2s. to 2s. 2d. per lb.

THYMOL.—11s. to 13s. 9d. per lb., according to quantity.

Perfumery Chemicals

ACETOPHENONE.—10s. per lb.

AUBEPINE (EX ANETHOL).—12s. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 6d. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—6s. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 3d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 3d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 9d. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—18s. per lb.

COUMARIN.—11s. per lb.

CITRONELLOL.—15s. per lb.

CITRAL.—9s. 6d. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—10s. per lb.

GERANIOL (PALMAROSA).—19s. per lb.

GERANIOL.—6s. 3d. to 10s. 6d. per lb.

HELIOTROPINE.—4s. 10d. per lb.

ISO EUGENOL.—13s. 6d. per lb.

LINALOL.—Ex Shui Oil, 12s. per lb. Ex Bois de Rose, 17s. per lb.

LINALYL ACETATE.—Ex Shui Oil, 15s. per lb. Ex Bois de Rose, 18s. 6d. per lb.

METHYL ANTHRANILATE.—9s. 3d. per lb.

METHYL BENZOATE.—3s. per lb.

MUSK KETONE.—36s. per lb.

MUSK XYLOL.—8s. 6d. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—10s. per lb.

RHODINOL.—28s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—20s. per lb.

Essential Oils

ALMOND OIL.—11s. 6d. per lb.

ANISE OIL.—3s. 6d. per lb.

BERGAMOT OIL.—31s. 6d. per lb.

BOURBON GERANIUM OIL.—11s. 6d. per lb.

CAMPHOR OIL.—63s. 6d. per cwt.

CANANGA OIL, JAVA.—20s. per lb.

CINNAMON OIL, LEAF.—5½d. per oz.

CASSIA OIL, 80/85%.—9s. 3d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 4d. per lb. Ceylon, pure, 2s. 1d. per lb.

CLOVE OIL.—6s. 9d. per lb.

EUCALYPTUS OIL, 70/75%.—2s. per lb.

LAVENDER OIL.—French 38/40%, Esters, 21s. per lb.

LEMON OIL.—9s. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—9s. 9d. per lb.

OTTO OF ROSE OIL.—Bulgarian, 70s. per oz. Anatolian, 30s. per oz.

PALMA ROSA OIL.—9s. 9d. per lb.

PEPPERMINT OIL.—Wayne County, 33s. per lb. Japanese, 9s. 6d. per lb.

PETITGRAIN OIL.—8s. 3d. per lb.

SANDALWOOD OIL.—Mysore, 26s. per lb. Australian 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, November 25, 1926.

THE market during the past week has been quietly steady, but the volume of business has been only fair. A better tendency is developing consequent upon the improvement in the industrial situation and a decided improvement in trade may be looked for.

Prices of most products are on the up grade. Export trade is quiet and uninteresting.

General Chemicals

ACETONE is lower in price at £64 to £65 per ton.
ACID ACETIC is in active demand; prices unchanged.
ACID CITRIC.—The market is lifeless; price nominally 1s. 2½d. to 1s. 3½d. per lb.
ACID FORMIC is in fair demand at £44 to £50 per ton according to quantity and position.
ACID LACTIC is quietly steady at £45 per ton for 50%.
ACID OXALIC has been in better demand and is quoted 3½d. per lb.
ACID TARTARIC is very quiet at 11½d. per lb. nominal.
ALUMINA SULPHATE is in fair request; price £5 10s. for 17-18%.
AMMONIUM CHLORIDE is very quiet; price £18 10s. per ton.
BARIUM CHLORIDE is in fair demand at £9 10s. to £9 15s. per ton, ex store.
COPPER SULPHATE is in fair inquiry; price about £25 per ton.
CREAM OF TARTAR is higher in price at £74 to £75 per ton. A further advance is expected.
EPSOM SALTS is unchanged at £5 10s. per ton.
FORMALDEHYDE is in short supply; price quoted is £42 to £43 per ton.
LEAD ACETATE is in good demand, white at £44 to £45 per ton, and brown at £42 to £43 per ton.
METHYL ACETONE is dearer and is quoted at £57 per ton.
METHYL ALCOHOL demand is nominal; price £46 to £48 per ton.
POTASSIUM CHLORATE is a steady market at 3½d. per lb.
POTASSIUM PERMANGANATE is quietly steady at 7½d. per lb. for high grade material.

Latest Oil Prices

LONDON.—LINSEED OIL steady and 2s. 6d. to 5s. higher. Spot, £31 15s., ex mill; November, £30 12s. 6d.; December to April, £30 15s.; May to August, £30 7s. 6d. RAPE OIL steady. Crude extracted, £45, ex wharf; technical refined, £47. COTTON OIL steady. Refined common edible, £38 10s.; Egyptian crude, £32; deodorised, £40 10s. TURPENTINE inactive at 6d. to 3d. per cwt. decline. American, spot, 61s.; December, 61s. 3d.; January to April and May to June, 62s. 9d.

HULL.—LINSEED OIL.—Spot to December, £31, January to April, £30 15s.; May to August, £30 12s. 6d. COTTON OIL.—Bombay crude and Egyptian crude, £30 10s.; edible refined, £35; technical, £34 10s. PALM KERNEL OIL.—Crushed, naked, 5½ per cent., £40. GROUNDNUT OIL.—Crushed-extracted, £43; deodorised, £47. SOYA OIL.—Extracted and crushed, £35; deodorised, £38 10s. RAPE OIL.—Crude extracted, £45 10s.; refined, £47 10s. per ton, net cash terms, ex mill.

Nitrogen Products

Export.—The effects of the coal stoppage on the production of sulphate of ammonia have operated on such an extensive scale that British producers have only very small quantities available for export. These are being sold on the basis of £11 5s. per ton, f.o.b. U.K. port.

Home.—The home position remains unchanged. The fresh price scale has caused little comment. Producers are now busy delivering orders booked for fertiliser manufacturers. As the price of sulphate is lower than last year, and as the difference in the parity prices of sulphate and nitrate are greater, it is expected that the home demand this season will show a considerable advance on that of last year. It is hoped that the coke ovens will be able to commence production almost immediately in order that this demand may be satisfied.

Nitrate of Soda.—The Chilean producers are still retarded by freight difficulties. Sales are being made at scale prices out of the stocks in various consuming countries. There has been a good move out of nitrate in the United States. Total sales of the Producers' Association are still a long way behind those of last year, and the closing of oficinas in Chile will help to reduce the quantity of stocks carried over at the end of the season.

POTASSIUM PRUSSATE is a very firm market and is quoted 7½d. per lb.
SODIUM ACETATE is quiet, but the price is firm at £20 per ton.
SODIUM BICHROMATE is in active demand; makers' price is unchanged.
SODIUM CHLORATE is quiet but exceedingly firm; market price 3½d. per lb.
SODIUM NITRITE is unchanged at £20 per ton.
SODIUM PHOSPHATE.—The firmer tendency is maintained; price £13 5s. to £14 per ton.
SODIUM PRUSSATE is in slow demand, but for improved consumption higher prices are expected; price to-day 4½d. per lb.
SODIUM SULPHIDE is higher in price; makers are well sold for some months ahead.
ZINC SULPHATE is unchanged.

Coal Tar Products

Although there has been no great increase in the production of coal tar products since our last report, the possible settlement of the coal strike has already had some effect on the prices of various products.

90's BENZOL is somewhat lower in price, and it is quoted at 2s. 1d. per gallon on rails, while the motor quality is quoted at 1s. 11½d. to 2s. per gallon.

PURE BENZOL is worth from 3s. 9d. to 4s. per gallon.

CREOSOTE OIL is quoted from 7½d. to 8d. per gallon on rails in the country, while the price in London is from 8½d. to 9d. per gallon at works.

CRESYLIC ACID is unchanged at 2s. 2d. per gallon on rails for the pale quality 97-99%, while the dark quality 95-97% is worth 2s. 1d. per gallon.

SOLVENT NAPHTHA is quoted at 1s. 10d. per gallon on rails.

HEAVY NAPHTHA is unchanged at 1s. 6d. to 1s. 7d. per gallon on rails.

NAPHTHALENES are also unchanged, the 76-78 quality being quoted at £8 10s. to £9 per ton, while the 74-76 quality is worth about £8 to £8 5s. per ton at makers' works.

PITCH shows no signs of weakening yet.

Calcium Cyanamide

DURING November an increasing interest has been displayed in cyanamide for autumn application; the price, which has remained at £9 8s. per ton carriage paid in 4-ton lots to any railway station in Great Britain, having evidently proved an attraction. From December 1 an increase of 2s. per ton is announced, bringing the price to £9 10s. per ton, carriage paid in 4-ton lots to any railway station in Great Britain.

Woodall-Duckham Vertical Retorts

THE County Borough of Bolton Gas Department has placed an order with the Woodall-Duckham Vertical Retort and Oven Construction Co. (1920), Ltd., for a further installation of Woodall-Duckham continuous vertical retorts on their Gas Street works. The new bench, which will comprise 24 retorts, has a total carbonising capacity of 108 tons per day. It is to be placed parallel to the existing bench. The contract includes coal handling machinery, a rotary wagon tipper for discharging wagons, and a waste-heat boiler. This is the third installation of Woodall-Duckham vertical retorts at Bolton, making the total carbonising capacity of these retorts 546 tons per day. The Wolverhampton Gas Co. have placed an order for a third installation of Woodall-Duckham continuous vertical retorts. This consists of an extension to the No. 2 installation and comprises four settings, each of four retorts and one producer. The new plant will have a nominal daily carbonising capacity of 112 tons per day. The contract includes coal and coke handling plant and a waste heat boiler. With this extension the total carbonising capacity of Woodall-Duckham vertical retorts at Wolverhampton amounts to 304 tons per day.

Unemployment Figures of Chemical Workers

UNEMPLOYMENT among chemical and allied workers in Great Britain and Northern Ireland, as recorded on October 25, was as follows:—Chemical manufacture, wholly unemployed, 7,553; temporary stoppages, 3,813; total, 11,366; Great Britain only, total 11,219; paint, varnish, and lead manufacture, etc., total for Great Britain only, 1,135; oil, glue, soap, ink, and match manufacture, etc., total for Great Britain only, 6,988. The percentage unemployed in workers in chemical manufacture in Great Britain and Northern Ireland was 12, a decrease of 0.4 per cent. on the figure at September 20, and an increase of 3 per cent. on the figure at October 26, 1925. The percentage unemployed in Great Britain only was 11.9. The estimated total number of insured persons at July, 1926, was 94,530, in Great Britain and Northern Ireland.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, November 24, 1926.

DURING the past week there has been a marked increase in inquiry for all classes of chemicals, and although quantities called for are not much larger than during the past month or two, there is every indication that brighter conditions will prevail once the price of fuel comes nearer the pre-strike level.

There are no changes in prices of any importance to record.

Industrial Chemicals

ACID ACETIC, 98/100%.—£55 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 to £38 per ton; 80% technical, £37 to £38 per ton, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated or small flakes, £37 per ton; powdered, £39 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, Ice Crystals.—Still in good demand. Now quoted 7½d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Unchanged at 1s. 3d. per lb., less 5%, ex store. Offered for prompt shipment from the Continent at about 1s. 2½d. per lb., less 5%, ex wharf.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80%.—Usual steady demand and price unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Spot material quoted 3½d. per lb., ex store. Offered from the Continent at 3½d. per lb., c.i.f. U.K. ports.

ACID SULPHURIC, 144°.—£12 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Spot material now on offer at 11½d. per lb., less 5%, ex store. Quoted 11½d. per lb., less 5%, ex wharf. Prompt shipment from the Continent.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material on offer at about £6 per ton, ex store. Quoted £5 8s. 6d. per ton, c.i.f. U.K. ports. Prompt shipment from the Continent.

ALUM. LUMP POTASH.—Spot material unchanged at £9 per ton, ex store. Offered from the Continent at about £7 15s. per ton, c.i.f. U.K. port. Crystal powdered quality, £7 10s. per ton, c.i.f. U.K. ports. Spot material about £8 5s. per ton, ex store.

AMMONIA ANHYDROUS.—Imported material selling at about 11½d. to 11¼d. per lb., ex wharf, containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £23 10s. to £25 10s. per ton, ex station. Continental on offer at about £21 10s. per ton, c.i.f. U.K. ports. Fine white crystals of Continental manufacture quoted £18 15s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED CORNISH.—Supplies for spot delivery still small. Quoted £18 15s. per ton, ex wharf, for prompt despatch from mines. Spot material on offer at £19 10s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Quoted £7 15s. per ton, c.i.f. U.K. ports, prompt shipment from the Continent. Spot material available at about £9 10s. per ton, ex store.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—English material unchanged at £9 10s. per ton, ex station; contracts 20s. per ton less. Continental now quoted £7 15s. per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £22 10s. per ton; crystals, £23 per ton; powdered, £24 per ton, carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or at £4 12s. 6d. per ton, f.o.b. U.K. ports, for export.

COPPER SULPHATE.—British material on offer for export at about £23 5s. per ton, f.o.b. U.K. ports. Continental dearer. Now quoted £22 10s. per ton, ex wharf.

FORMALDEHYDE, 40%.—Spot material on offer at £40 per ton, ex store. Quoted £38 per ton, c.i.f. U.K. ports, prompt shipment.

GLAUBER SALTS.—English material quoted £4 per ton, ex store or station. Continental on offer at about £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material quoted £37 per ton, ex store.

LEAD, WHITE.—Quoted £37 10s. per ton, ex store.

LEAD, ACETATE.—In rather poor demand. White crystals now quoted £44 per ton, ex store, spot delivery. Offered from the Continent at £43 per ton, c.i.f. U.K. ports. Brown quoted £41 per ton, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

POTASH CAUSTIC, 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton, c.i.f. U.K. port, according to quantity and destination. Spot material available at about £29 per ton.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 5s. per ton, ex wharf, early delivery. Spot material on offer at £26 10s. per ton, ex store. 90/94% quality quoted £22 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 98/100%.—Powdered quality available at about £25 5s. per ton, c.i.f. U.K. ports. Crystal £2 per ton extra.

POTASSIUM NITRATE (SALTPETRE).—Quoted £22 per ton, c.i.f. U.K. ports, prompt shipment from the Continent. Spot material about £24 per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—On offer at 7d. per lb., ex store, spot delivery. Quoted 6½d. per lb., ex wharf, early shipment.

POTASSIUM PRUSSIAN, YELLOW.—In rather better demand. Now quoted 7d. to 7½d. per lb., ex store. On offer for early shipment from the Continent at 6½d. per lb., ex wharf.

SODA CAUSTIC.—76/77% at £17 10s. per ton; 70/72%, £16 2s. 6d. per ton. Broken, 60%, £16 12s. 6d. per ton. Powdered, 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—English material quoted £22 10s. per ton, ex store. Continental on offer at about £19 per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined re-crystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 3½d. per lb., delivered.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton more; alkali, 50%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 per ton, ex station, minimum 4-ton lots; pea crystals, photographic quality, £14 10s. per ton, ex store, spot delivery. Continental commercial crystals quoted £8 15s. per ton, ex store.

SODIUM NITRATE.—Ordinary quality quoted about £12 12s. 6d. per ton, ex store. Refined quality, 5s. per ton extra.

SODIUM NITRITE, 100%.—£21 5s. per ton, ex store, spot delivery.

SODIUM PRUSSIAN (YELLOW).—In better demand. Now quoted 4½d. per lb., ex store, spot delivery. Quoted 4½d. per lb., ex wharf, prompt shipment.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE, 60/62%.—Solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 3d. per ton. All delivered buyers' works U.K., minimum 5-ton lots, with slight reduction for contracts; 60/62%, solid quality offered from the Continent at about £8 15s. per ton, c.i.f. U.K. ports. Broken quality, 15s. per ton more; crystals, 30/32%, about £6 10s. per ton, c.i.f. U.K. ports.

SULPHUR.—Flowers, £11 15s. per ton; roll, £10 10s. per ton; rock, £10 10s. per ton; floristella, £10 per ton; ground American, £9 5s. per ton. Ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental make on offer at about £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

ALPHA NAPHTHOL.—2s. per lb. Some inquiries.

NEVILLE AND WINTHER ACID.—4s. 9d. per lb. Some inquiries.

PARANITRANILINE.—1s. 9d. per lb. Some inquiries.

SODIUM NAPHTHIONATE.—1s. 9d. per lb. Small inquiries.

Company News

"SHELL" TRANSPORT AND TRADING CO.—The directors announce an interim dividend of 2s. per share, free of income tax, payable on January 5.

SANTA CATALINA NITRATE CO.—A dividend of 5 per cent. for the year ended June 30 last, is recommended, making the total distribution for 1925-26 20 per cent.

LAGUNAS SYNDICATE, LTD.—In their report for the year ended June 30 last, the directors state that the net amount brought forward, after deducting the dividend at 2 per cent., less tax, paid November 20, 1925, is £676, to which is added the gross profit for the year of £16,218, making £16,985. London expenses, income tax, interest and discount, and refund to buyers under fall clause, require £16,674, leaving £311. After providing for the debenture sinking fund and interest, amounting to £18,462, there remains a debit balance of £18,150.

LANGDALE'S CHEMICAL MANURE CO.—The report for the year ended September 30, 1926, states that the profit is £156, to which is to be added the balance brought forward of £214, making a total to be carried forward of £370. During the year, it is stated, competition from the Continent necessitated a reduction in the prices of superphosphate, which has been unremunerative. The general strike in May prevented the company from making deliveries during an important period of the season. Trade in sulphuric acid, owing to the industrial situation, has been much restricted.

BRITISH COTTON AND WOOL DYERS' ASSOCIATION, LTD.—An interim report for the six months ended September 30 last, shows that trading for the period, including income from investments, etc., after charging administration expenses, £1,974 for specific depreciation, and £28,931 for repairs and renewals, and providing an estimated amount in respect of income tax, and other contingencies, has resulted in a profit of £37,042, as compared with £67,463 for the corresponding six months last year. Deducting audit fee and other professional charges, £543, interest on first mortgage debenture stock to September 30, 1926, £12,400, debenture holders' trustees, £100, and amount transferred to depreciation fund, £12,500 (which now stands at £277,500), leaves a net profit of £11,499. To this is added the amount brought forward at March 31 last (after deducting £5,250 voted at shareholders' meeting) of £34,179, making a credit balance on profit and loss account of £45,678. The directors state that the Association's turnover for the six months under review was practically identical with that of the same period twelve months ago. The stocks of coal at the end of April were sufficient to keep the branches fully going for eight weeks. The extra cost of fuel since incurred amounts to £26,200, not including the loss of time in output and other drawbacks caused by inferior fuel.

Tariff Changes

Fiji.—Proclamation No. 11 of 1926, dated September 22, 1926, revokes the Proclamation No. 2 of 1925, which prohibited absolutely the importation into Fiji of Omnopon, Omnopon-Scopolamine, and the "Tubunic" brand of morphine and diamorphine tablets.

UNION OF SOUTH AFRICA.—The dumping duty on imported cement is extended to cement imported from Denmark, Italy, and Canada by Proclamation No. 233, dated September 29.

BELGIUM.—A corrected reprint of the list of revised "coefficients of increase" on the Customs duties on certain goods on importation into Belgium resulting from the Decree of October 26, has been issued, and includes some chemical and pharmaceutical products.

CZECHOSLOVAKIA.—A statement showing the reduction of duties on certain goods imported into Czechoslovakia resulting from the enforcement of the Commercial Convention between Poland and Czechoslovakia, dated April 23, has been issued, and includes sugar (other than beet or cane), paraffin wax, cement, zinc sheets and plates, lithopone, potato starch, starch glue (dextrine, leigum and gommeline) and liquefied sulphur dioxide gas. The new duties came into force on November 6, and are applicable to similar goods of United Kingdom origin imported into Czechoslovakia.

POLAND.—A statement showing the reduction of duties

on certain goods imported into Poland resulting from the enforcement of the Commercial Convention between Poland and Czechoslovakia, dated April 23, 1925, has been issued and includes quicklime (not hydraulic), formic acid, hydro-sulphite of soda, formaldehyde sulphonylate, and parts of machinery or apparatus for sugar refineries, breweries, distilleries, mineral oil refineries, etc. These new duties are applicable to goods of United Kingdom origin imported into Poland.

FRANCE.—The French *Journal Officiel* for November 7 contains a Ministerial Decree, dated November 6, which sets out the various rates at which the Turnover Tax is levied on imports. The rate is 3½ per cent. on nitrates of soda and lime, cyanamide, sulphate of ammonia, potash salts (K₂O), dephosphorisation slag, superphosphates and oilcakes (except such as are admitted duty free).

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CHEMICALS, ETC.—A representative of a leading Melbourne firm is at present visiting this country and desires to get into touch with British manufacturers of machinery, chemicals and other goods suitable for the Australian market, with a view to arranging agencies. Replies should be addressed in the first instance to the Commercial Bureau, Australia House, Strand, London, W.C.2, quoting Reference No. 404.

TABLE SALT.—A firm of commission agents in Trinidad desire to obtain the representation of producers of fine table salt in bags of 60 lb. (Reference No. 598.)

PATENT MEDICINES, ETC.—A well-established dealer and manufacturers' agent in Colombo has expressed a desire to undertake the representation for Ceylon of British manufacturers of patent medicines, etc. (Reference No. 601.)

HEAVY CHEMICALS, ETC.—A New Zealand firm of agents wishes to obtain the representation of British manufacturers. (Reference No. 603.)

CREOSOTE.—H.M. Consul-General at Sofia reports that the Ministry of Railways, Posts and Telegraphs is calling for tenders, to be submitted by December 10, 1926, for the supply of 1,000 tons of creosote for impregnating railway sleepers. British firms desiring to offer British material may obtain further particulars on application to the Department of Overseas Trade. (Reference B.X. 3046.)

CHEMICAL PRODUCTS.—A French firm in Paris desires to secure the representation of British manufacturers. (Reference No. 608.)

PAINTS, NON-FERROUS METALS, ETC.—A British firm of import and export merchants, recently established at Yunnanfu (capital of Yunnan Province in South-West China), desires to establish business relations with British manufacturers of paints and paraffin wax who are desirous of extending their business to Yunnan Province. The firm also desires to get into touch with British importers of antimony, lead, cobalt, zinc, copper, bismuth, quicksilver. (Reference No. 624.)

Chemical Engineering Conference

THE Institution of Chemical Engineers will hold a conference at the Science Museum, South Kensington, London, on the afternoons and evenings of Wednesday, Thursday, and Friday, December 8, 9, and 10. On December 8, a paper on "The Measurement of Mechanical Power Absorbed by Driven Machines: A Recording Torsion Dynamometer," by Messrs. R. G. Parker and D. N. Jackman, will be read and discussed. On December 9, there will be a symposium on "Statistical Methods in Relation to Industrial Efficiency," in connection with which the following papers will be read and discussed: "The Control of Chemical Plant Operation by Statistical Methods," by Messrs. D. Rider and T. C. Finlayson; "Statistics in Industry: Some Uses and Limitations," by Mr. H. C. Marris; and "Statistical Methods in Connection with Plant Construction," by Mr. E. Cooke. On December 10, Dr. G. Martin will read a paper on "Researches on the Laws of Air Elutriation" in the afternoon; while at the evening session Mr. H. M. Dunkerley will read a paper on "Refrigeration in Chemical Manufacturing Processes."

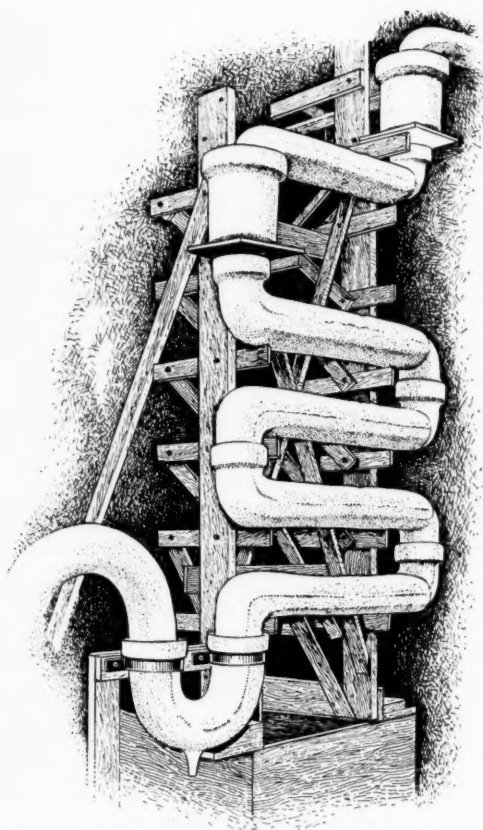
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Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

MORRIS AND SON (SWINTON), LTD., aerated water manufacturers. (M., 27/11/26.) Registered November 16, £800 debentures, to J. Gerrard and Sons, Ltd., Pendlebury Road, Swinton; general charge. *£1,000. December 31, 1925.

STUBBS (HERBERT H.), LTD., London, S.E., polish manufacturers. (M., 27/11/26.) Registered November 10, £7,000 debentures, to J. L. Milligan, 33, Paternoster Row, E.C., C.A.; general charge (subject to mortgage for £3,000 created prior to acquisition of properties by co.).

Satisfactions

ALBRIGHT AND WILSON, LTD., Oldbury, manufacturing chemists. (M.S., 27/11/26.) Satisfaction registered November 11, £25,000 registered February 8, 1921, and balance of the series cancelled unissued.

JAKSON (JOHN) AND CO. (MITCHAM ROAD 1921), LTD., Croydon, growers and distillers of peppermint, etc. (M.S., 27/11/26.) Satisfaction registered November 11, £12,000, part of amount registered February 10, 1921.

MORRIS AND SON (SWINTON), LTD., aerated water manufacturers. (M.S., 27/11/26.) Satisfaction registered November 16, £1,800, registered November 10, 1913.

London Gazette, &c.

Company Winding Up Voluntarily

GRIMSHAW (OF ECCLES), LTD. (C.W.U.V., 27/11/26.) C. M. Tweedale, 47, Mosley Street, Manchester, Chartered Accountant, appointed liquidator November 15.

Receiverships

BRITISH AND COLONIAL CHEMICAL CO., LTD. (R., 27/11/26.) C. R. Akers, F.C.A., of 1, Queen Victoria Street, E.C.4, was appointed receiver and manager on November 11, under powers contained in debenture dated August 16, 1926.

SOUTHDOWN CHEMICAL CO., LTD. H. P. Mounsey, of Lord Street, Liverpool, ceased to act as receiver on October 25, 1925, of the property contained in debenture dated February 20, 1925.

New Companies Registered

THE CANNING TOWN GLASS WORKS, LTD.—Registered as a "public" company on November 18. Nom. capital, £400,002 in 10,666,720 shares of 9d. each. To adopt two agreements, one with British Glass Industries, Ltd., and M. D. Booth, its liquidator, and the other with the Canning Town Glass Works, Ltd., and W. B. Anderson, its liquidator, and to carry on the business of glass, glass bottle and stopper manufacturers, etc. A subscriber: G. W. Waspe, 325, Hertford Road, Waltham Cross. Solicitors: J. D. Langton and Passmore, 111, Old Broad Street, London, E.C.

DRUMMOND CHEMICAL CO., LTD.—Registered November 18. Nom. capital, £1,000 in £1 shares. General chemical and other like experts and specialists, chemical manufacturers, etc. A subscriber: J. Nicholls, 50, Duckworth Lane, Bradford. Solicitor: E. Cawthron, 29, Tyrrel Street, Bradford.

Northern Coke Research Committee Research Programme Commenced

THE first meeting of the Northern Coke Research Committee was held at Armstrong College, Newcastle-upon-Tyne, recently. Dr. A. Cochrane took the chair, and there were present also Major E. O. Henrici (Secretary of the Fuel Research Board), Mr. Paul List and Mr. E. Tosh (West Coast Blast Furnace Owners' Association), Major A. C. Scoular and Mr. D. R. Wattleworth (Cumberland Coal Owners' Association), Dr. Henry Peile (Durham Coal Owners' Association), Mr. A. H. Middleton and Mr. W. E. Mordecai (Coke Oven Managers' Association), Dr. L. Slater (Blast Furnace Coke Research Committee, Yorkshire and Derbyshire Coalfields), with Sir Theodore Morison, Professor Granville Poole (Armstrong College), Mr. E. C. Evans (organising secretary) and Professor H. V. A. Briscoe (secretary). Letters were received from the Durham Coal Owners' Association promising £150 for the first twelve months, and from the Cleveland Ironmasters' Association stating that the local steel-making firms had agreed to contribute a further sum of £75. Consideration of the promises of financial support which had already been made by the industry and by Armstrong College, together with the expectations of further assistance from the Fuel Research Board, showed that the committee had at its disposal funds sufficient to permit of an immediate beginning of work upon the research programme. The committee approved proposals to convert and equip as a research laboratory a vacant building in Armstrong College, and adopted a detailed research programme summarised in the statement that the work of the committee shall be: "To apply laboratory tests of physical and chemical properties to typical cokes from the Northern area, and to secure such samples, data, reports and other records as will serve, at the time or subsequently, to correlate the results of the tests with (i) the sources and nature of the raw coal; (ii) the methods of coking; and (iii) the behaviour of the cokes in use in industry and as domestic fuel." The secretary and Professor Poole were given authority to proceed with the research scheme as staff and laboratory facilities became available. Estimates of expenditure for the year 1926-27 were approved for submission to the Fuel Research Board. At the conclusion of the meeting, Dr. Cochrane having informed the committee that the pressure of other duties prevented his accepting the office of chairman, Dr. H. Peile, C.B.E., was unanimously elected to the chair.

An Appeal to Manufacturers

SIR MAX MUSPRATT, President of the Federation of British Industries, has addressed to all the members of that organisation a statement that in view of the probable early return to work in the coalfields, it is extremely desirable that steps should be taken to prevent price increases. It should be realised that any excessive demand for coal in the immediate future would automatically mean price increase and, therefore, it is recommended that members should limit their demands as much as possible, and avoid any attempt to amass surplus stock. Regarding the price it must be realised that during the pre-strike period the coal industry was subsidised, and it is known that some of this subsidy was reflected in the reduced prices which were ruling during that period. This may have to be taken into consideration when price terms are fixed for new contracts; nevertheless every effort should be made to keep the increase, if any, on pre-strike contracts as small as possible.

London Section of the Institute

THE general meeting of the London and South Eastern Counties Section of the Institute Section was held last week. The officers were elected as follows: chairman, Sir Robert Robertson; vice-chairmen, Mr. E. R. Bolton and Mr. G. F. W. Marlowe; treasurer, Mr. Arthur J. Chatman; secretary, Mr. E. B. Hughes. The committee was constituted as follows: fellows, C. E. Barrs, E. T. Brewis, O. E. Campbell, Dr. Frankland Bent, Professor J. C. Drummond, Lewis Eynon, B. F. Howard, F. J. Johnstone, J. O. Rosedale, E. W. Kemp-Jones, Dr. G. T. Morgan, and P. J. Fageman; associates, Dr. A. W. Barrett, A. V. Hussey, Miss S. M. L. Snelus, C. W. Spiers, F. J. Tritton, and S. G. Stevenson. The district member of council is Mr. E. M. Hawkins.

